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ABSTRACT

This document contains six papers on research about the school-to-work transition. Following an introduction (Nevzer G. Stacey), the first paper, "Determinants and Consequences of Fit between Vocational Education and Employment in Germany" (J. C. Witte, A. L. Kalleberg), concludes from a nationally representative longitudinal study of 16,000 individuals in 5,021 households that only about 50% of German men and 60% of German women have jobs fitting their prior vocational training. Discussed in "Financing Apprenticeship Training: Evidence from Germany" (D. Harhoff, T. J. Kane) are the following reasons why German firms support apprenticeship programs despite their high cost: cultural factors, union support, the high cost of firing, and low apprentice wages. The paper "School-to-Work Opportunities: Issues in State and Local Governance" (S. P. Choy) describes federal and state policies directed toward developing transition programs to prepare youths for high-skill, high-wage careers and transforming workplaces into learning sites. Outlined in "Industry-Based Education: A New Approach for School-to-Work Transition" (G. Hoachlander) is a model school-to-work program. The final two papers, "Profile of Target Populations for School-to-Work Transition Initiatives" (S. P. Choy, M. N. Alt, R. R. Henke) and "Opportunities or Obstacles? A Map of Federal Legislation Related to the School-to-Work Initiative" (M. T. Moore, Z. Waldman) discuss state programming options in view of federal legislation targeting specific population groups. Most papers include substantial bibliographies. (MN)

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School-to-Work

What Does Research Say About It?

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1. Introduction

Nevzer G. Stacey

As educators and policymakers plan who the School-to-Work Opportunities Act of 1993 will serve, the more they know about subgroups of students and how federal laws effect them, the easier they can design the programs. In commissioning these papers, the School-to-Work Transition Team in the Office of Educational Research and Improvement posed several questions to help clarify the options: What do the most recent data from the much-referenced German apprenticeship program tell us? If the original intent of the proposed U.S. legislation is to help the noncollege bound make the transition from school to work, what do we know about these young people? Which current federal programs may affect this new legislation? What relevant governance issues need to be examined? Given what we know and where we need to go to create a system, is there already a working model in the United States? These papers are the authors' responses to these questions.

The first paper, by James Witte, analyzes longitudinal German data and finds only about half of German men and about 60 percent of German women currently have jobs that fit their prior vocational training. On the other hand, he finds these programs' graduates have developed good general job skills useful in many occupations, regardless of whether their jobs match their training. Therefore, Witte suggests "fit" should not be the primary goal of on-the-job training programs. He also suggests U.S. policymakers target smaller firms for apprenticeship programs and encourage apprenticeships in occupations with successful programs such as the construction industry.

The second paper, by Dietmar Harhoff and Thomas J. Kane, focuses on financing apprenticeship programs. They compare the U.S. and German systems of preparing young people for work. The German system has a high financial investment (the apprenticeship program), followed by relatively constrained opportunities for young people to move from job to job and relatively little wage differential. The American system, on the other hand, has a significantly lower financial investment in young people, but they are allowed—and take advantage of—much greater flexibility in mobility and wages. Despite these differences, the authors report earnings for U.S. and German youth follow similar patterns over their careers. The authors list several reasons why German firms support apprenticeship programs in spite of the high costs, the most important being cultural. Among other reasons are the support of the unions, the high cost of firing, and the low wages of apprentices. None of these factors seems to exist in the United States.

The third paper, by Susan Choy, focuses on state and local governance issues. She identifies two policy goals of the proposed legislation: to provide young people access to transition programs that prepare them for high-skill, high-wage careers and to transform workplaces into learning sites. She helps us understand how current education and employment-training services are delivered and who controls them. She points out since some goals of the proposed legislation are consistent with those in the Carl D. Perkins Vocational and Applied Technology Education Act of 1990, states have some discretion in the directions of their programs. She points to decisions about whether the programs will be focused on the disadvantaged as an illustration of how much discretion states can have designing their programs. Choy describes how some states are already moving in directions consistent with federal policy objectives while others are not. She explains that program differences relate to policy decisions influenced by several key factors: Some states have little control over resource allocation at the local level, do not have an integrated administration of secondary and postsecondary education, and do not have the authority to regulate workplace learning or require employers to participate in school-to-work programs.

Gary Hoachlander draws upon decades of experience in American vocational education to develop a model school-to-work program. Today's vocational programs, he writes, carry with them a certain stigma; young people and their parents shy away from these programs because they do not want to be classified as voc-ed participants. To move away from this stigma, Hoachlander proposes to arrange high schools around broad occupational themes or categories. These themes would integrate humanities, the arts, science, and technology with occupational clusters; students interested in architecture and those interested in carpentry would attend the same school, for instance. They would choose to become involved in themes or areas most closely related to their interests. His proposed approach has strengths: no competition between academic and vocational programs and no competition between academic and vocational teachers. And employers would work with teachers in evaluating student workers' performance. Also, by expanding the narrow focus of vocational programs, Hoachlander's model would foster better integration of general academic courses. This magnet-schools approach is currently used in the Chicago High School for Agricultural Science and Technology and Ringe High School in Cambridge, Massachusetts.

Rich data about the target population and the options required or available under federal legislation are found in the last two papers—one by Susan Choy, Martha Naomi Alt, and Robin R. Henke and the other by Mary T. Moore and Zev Waldman. They show us not only what programs serve which students in which ways but also what options are open to state initiatives through federal legislation.

At first glance, school-to-work may seem like a simple concept, but as these papers demonstrate, tinkering with the American system is extremely complex. How do we best prepare students for work as well as for continuing their education? To answer that question we need first to look at what we are doing now—where we are doing it right and where we are doing it wrong. We can, of course, also look at how other countries prepare young people. But we should take care the solutions we propose are appropriate for the United States. We must devise a plan that keeps our options open and satisfies our immediate needs.

2. Determinants and Consequences of Fit Between Vocational Education and Employment in Germany

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Introduction

Without a doubt, the size and scope of the German vocational education system is impressive; in each of the last 10 years it has graduated more than 600,000 apprentices trained in hundreds of specific occupations. This has made it tempting to attribute much of the German economy's reputation for productivity and quality to the role played by its vocational education system in shaping a skilled labor force. But there are many other factors that have gone into Germany's economic success. So before a German-style apprenticeship program is imported to the United States, there should be a close examination of the system's costs and benefits to see not only whether it is cost effective for Germany, but also whether it could be implemented effectively in the United States.

A vocational education system may try to achieve many goals—developing specific occupational skills; transmitting general work skills and employee socialization; building the self-esteem of the least advantaged; and providing structured activities for youth who might otherwise be engaged in undesirable or illegal activities. But the German apprenticeship system is so expensive[1] it clearly cannot be considered effective unless it finds practical on-the-job applications. That is, unless many trainees find jobs in their fields, policymakers should think twice before assuming the system could or should be emulated in the United States.

This paper examines how well graduates of the German vocational education system can find jobs that match their training experiences. Our analysis is based on a large, nationally representative panel data set—the first seven waves (1984–1990) of the German Socio-Economic Panel (GSOEP)—that contains information on individuals who left the vocational education system as recently as 1990.[2] We first describe briefly the German system of vocational education, highlighting several features that are particularly relevant to matching persons to jobs. We next discuss the dynamics of fit and identify individual and structural factors we hypothesize will influence whether or not an individual's employment fits his or her vocational education. We then report the results of two sets of complementary analyses: a series of cross-sectional analyses of the likelihood an individual is currently employed in a job that fits his or her vocational education; and a dynamic analysis of the process by which individuals move into jobs that fit their skills over the course of their careers.

Finally, we estimate earnings models to assess the returns to various types of vocational education. We consider, in particular, how income relates to whether individuals are working in the occupations in which they have been trained.

The German Vocational Education System

Germany's contemporary vocational education system is closely linked to its secondary educational system (see figure 1). At age 10, students are tracked in a rigid educational system—placed in a lower secondary school (*Hauptschule*), a middle secondary school (*Realschule*), or an upper secondary school (*Gymnasium*). After initial assignment, movement between tracks is rare; in the 1970s and early 1980s more than 90 percent of those completing their secondary education remained in the type of school they entered at age 10.[3] As early as age 15 students may complete the

Hauptschule and enter vocational education, while most *Realschule* graduates do this at age 16. Germans are generally 18 or 19 when they complete the *Gymnasium*, and, at this point, they may choose to enter the university or begin a course of vocational education. Training for skilled jobs, white-collar as well as blue-collar, are open only to those with a degree from a *Realschule* or a *Gymnasium*. University admission, and access to highly prized professional careers, requires a *Gymnasium* degree.

The most prominent feature and central component of the German vocational education system is the *duales System*, which combines part-time vocational school with an apprenticeship in a firm; 50 to 60 percent of all 16- to 19-year-olds enter the dual system each year. This proportion has changed little in recent decades, and in the late 1970s and early 1980s the program expanded rapidly to accommodate the large number of Germans who were 16 to 19 years old. The total number of young people in the dual system grew from 1,269,000 in 1970 to 1,831,000 in 1985.[4]

The dual system is unique in its combination of part-time vocational school and an apprenticeship program based on extensive firm-based instruction. In the dual system, employers create positions and choose among applicants. Remuneration varies from firm to firm, but all employers pay apprentices less than the regular legal minimum wage. Employers provide instruction and training in the skills and experiences necessary to practice the occupation and in exchange receive labor that becomes increasingly productive over time. The employer and the trainee generally see the apprenticeship as a trial employment arrangement with the possibility of future employment, although it is by no means guaranteed.

Apprenticeship programs are monitored by a comprehensive quality-control system. There are examinations of the trainees and oversight from various educational, legal, administrative, and political officials.[5]

Most young people in Germany know participation in the dual system enhances their subsequent career attainment. They realize immediate, unskilled employment would offer temporarily higher wages but completing an apprenticeship has clear long-term positive career advantages.[6]

- It improves the odds of employment and the likelihood of receiving high earnings and other job rewards.[7] Individuals with a completed apprenticeship may also be more likely to obtain further credentials that allow them to compete for lower- and mid-level supervisory and managerial positions.[8]

- Skilled workers are in a better position to resist processes of task routinization and deskilling—lowering the skills required for a job so less expensive workers can be hired.[9] As the overall skill level of the workforce increases and technological advances eliminate the simplest and most routine tasks, fewer and fewer jobs will be available for persons without any vocational training.[10]

- The German dual system is able to serve as a mobility channel because employers recognize the credentials awarded by one another to be valid indicators of acquired skills. This may be traced to the fairly high level of standardization in training within occupations and to a historically based culture of training that views apprenticeship as the primary means of acquiring occupational skills.[11]

From an individual's perspective, an apprenticeship generally requires a 2-to 3-year commitment to training in a specific occupation. Apprentices are trained and certified in one of 377 specific occupations. Table 1 lists the most common courses of apprenticeship and the absolute number of trainees found in these fields in 1983. Taken together, these categories accounted for more than half of the total number of apprenticeships in that year.

Though Americans usually associate apprenticeship programs with skilled occupations in the trades and manufacturing, apprenticeship training in Germany covers a wide range of occupations. For example, sales and clerical work are the most common types of apprenticeship training in Germany, accounting for about one-third of all apprentices. In the United States, on the other hand, specific vocational training is not extensive in either area; the training provided is conducted as formal, in-school instruction or informal on-the-job training rather than in a formal apprenticeship program.

The dual system is not the only type of vocational training in Germany. There also are school-based programs that include full-time specialized vocational schools (*Berufsfachschulen*) and schools of allied health professions (*Schulen des Gesundheitswesens*). In 1985, 340,000 young people were enrolled in *Berufsfachschulen*, which offer 1- to 3-year courses of instruction, primarily in commercial and administrative occupations. An additional 112,000 students attended the *Schulen des Gesundheitswesens* for training as nurses, midwives, masseurs and masseuses, and occupational therapists.[12] These schools are relevant for our analysis because they are the primary means of nonacademic vocational education that do not involve apprenticeship training. As such, they provide an important contrast for evaluating the relationship between firm-based apprenticeship instruction and the utilization of training.

Defining and Measuring Fit Between Education and Employment

In Germany there are many jobs open only to workers with the appropriate apprenticeship training.[13] At the same time, however, many Germans who complete apprenticeship programs are forced to work outside the occupations for which they have been trained because for each available job in their field, there are several times as many apprentices.[14] As column 2 of table 1 shows, there is considerable variation in the proportion of apprentices to total employees even using broad occupational categories; the degree of variation increases greatly if one looks at more narrowly defined occupational categories. For example, apprentices make up one-fifth of those employed in the repair of automobiles, bicycles, and sewing machines. If an occupation is growing, then a large proportion of persons in training is to be expected. However, in fact, there has been little growth in the number employed as skilled auto mechanics in the past decade. Thus, many of those trained as auto mechanics take positions that are more (auto sales) or less (semi-skilled, routine production workers) related to their training.[*]

Some portion of the misalignment between the German apprenticeship system and labor market opportunities is undoubtedly due to employers' creating apprenticeship positions solely for the purpose of obtaining cheap apprenticeship labor with no intention of later offering regular employment.[15] Furthermore, an imperfect fit between training and employment is, to a certain extent, unavoidable due to the impact of technological change on the overall occupational structure and the content of individual occupations.[16]

In addition, differences in fit are generated by various individual and structural characteristics, which are the focus of this paper. Before considering these characteristics, however, we should introduce the source of the data used in our analyses and discuss the measures of "fit" it provides.

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[*] Other areas with high proportions of apprentices among the total labor force include finish carpentry (15.3 percent of 640,400 employees); auto sales (17.6 percent of 198,600 employees); dry cleaning and personal services including hairdressing (16.0 percent of 95,100 employees); the hotel industry (14.6 percent of 99,300 employees); butchering and meat processing (14.4 percent of 118,200 employees); and roofing (11.5 percent of 122,600 employees).(Bundesminister für Bildung und Wissenschaft 1989).

Source of Data

Our primary data source is the GSOEP, a nationally representative, longitudinal study of 5,021 households and the 16,000 individuals living in these households. The study, started in West Germany in 1984, surveys respondents annually.[17] The analyses in this paper are based on the first seven waves (1984–1990) of data. GSOEP survey instruments are designed to collect continuous records of employment, education, income, program participation, and household composition for the period of the panel. Retrospective components were also included in the early panel waves to provide educational, employment, and marital histories to cover the period before 1984.

We restricted the GSOEP sample in two ways—one for the cross-sectional analyses of the incidence and consequences of fit, and in a slightly different fashion for examining the process of moving into a job that fits one's training. Our analysis of the GSOEP data as a series of cross-sections excludes for a given year all unemployed persons, as well as those not in the labor force. We further restrict the sample to persons with completed vocational education, obtained either through the dual system or other, school-based forms of vocational education. We also exclude all self-employed persons and confine the analysis to persons in nonsupervisory positions. (Persons in supervisory positions represent a different population—in terms of people as well as positions—and the matching process linking training and employment may be different.* Thus, eliminating supervisory personnel allows us to avoid estimating models based on a mix of persons at different career stages; we focus on persons early in their careers who are currently either using their vocational education or, if not, could conceivably benefit from doing so. In addition, even with a sample this size, the number of supervisors is too small for detailed analysis.)

For our dynamic analysis of the process of moving into fit, we created a so-called discrete-time event history file that contains multiple records for each individual. This file includes one record for each time a respondent was interviewed in 2 successive years during the first seven waves of the panel (1984–1990). Additional records were generated for all ongoing spells at the time of the first interview to represent time spent on the job before the start of the panel. The variables in each record include person and job attributes at the start and end of the period. The most important condition defining the analytical population for these analyses is an individual must be employed in a job that does *not* fit his or her training at the start of the period. Persons who are already in jobs that fit their training are not of interest since our goal is to examine the factors that influence the likelihood of moving from a job that does not fit to one that does. As in the cross-sectional analyses, we include only persons employed in nonsupervisory positions; however, here we also consider individuals engaged in training at the start of the period and employed at the end of the period because the incentive to use one's vocational education is likely to be greatest at this time.

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*The excluded occupational positions include: foremen and supervisors (*Vorarbeiter, Kolonnenführer*), master craftsmen (*Meister, Polier*), all self-employed persons (*Selbständige einschließlich Familienangehörige*), white collar workers with highly skilled or management functions (*Angestellte mit hochqualifizierter Tätigkeit oder Leitungsfunktion*) and higher level civil servants (*Beamte in gehobener oder höherer Dienst*). Taken as a group the mean age of men (44.7 years) and women (41.9) in these positions is significantly greater ($p<.01$) than that of men (40.3) and women (37.1) in nonsupervisory positions. A significantly greater proportion of men ($p<.001$) and women ($p<.05$) in supervisory positions report that their current job fits their training than do persons in nonsupervisory positions. However, men in supervisory positions were significantly less likely to have received industrial apprenticeship training ($p<.001$), but significantly more likely to have completed a commercial apprenticeship ($p<.01$) or a school-based form of vocational education ($p<.001$) than men in nonsupervisory positions. A similar pattern was not observed among women, though the number of women in the GSOEP sample in supervisory positions (e.g., n=46 in 1987) is relatively small.

Measuring "Fit"

Fit can be measured objectively as well as subjectively, and the GSOEP data contain information on both types of indicators. Objective measures are those that compare apprenticeship program designations to occupational titles or skill requirements. By contrast, subjective measures of fit are respondents' assessments of whether or not their current occupation is the one for which they received training.[*]

We base our analyses on a subjective measure of fit for several reasons. First, we assume respondents are the best judges of whether they have been previously trained for their current occupations. Second, specific vocational training titles were collected only for those GSOEP respondents who completed a course of training during the time covered by the panel study (since 1984); hence, we are unable to determine the exact type of training received by respondents who completed their vocational education before 1984. Finally, the wording of the subjective question regarding fit (*erlernter Beruf*) is such that most respondents base their responses on official training and occupational categories anyway.[**]

If the two measures of fit tended not to agree, relying solely on the subjective measure would be troubling. Fortunately, the two measures are closely correlated in those cases where an objective indicator of fit is also available. In the public use GSOEP file, data are available for 715 persons who completed some form of postsecondary education during the first six waves of the panel. After excluding persons subsequently unemployed, as well as those who did not respond to the subjective fit question or whose training or employment areas could not be coded, there are about 400 cases where we have information on subjective and objective assessments of fit. In about three-quarters of these cases the objective and subjective indicators of fit correspond with one another. When the two measures do not agree, most of the time (80 percent of these cases) it is because the subjective measure indicates a fit between education and employment while the objective measure does not.[18] Using the subjective definition of "fit" in any single year, we find about half of all persons who have completed an apprenticeship or some other form of vocational education report they are employed in a job that fits their training. The proportion of German women with vocational education who are employed in the job for which they have been trained (61 percent) is significantly larger than the proportion of men who have jobs that fit (49 percent) (see columns 1 and 2 of the last row of table 2. In addition, table 2 presents means and standard deviations of the individual and structural explanatory variables discussed below.[19]

Individual Determinants of Fit

There are two general reasons why characteristics of individuals affect fit. First, the nature of human capital changes over a person's career, which leads to differences in fit according to age and employment tenure. And second, the type of training one receives—the extent to which it is for general or specific skills—will affect the breadth of one's job opportunities. All other things being equal, we hypothesize that the likelihood of a close fit between vocational education and employment declines over the course of an individual's worklife, is associated with employment tenure, and is related to the amount of specific as opposed to general skills one acquires through vocational education.

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[*] Americans probably define "fit" much more broadly than Germans. An American trained as an auto mechanic who is so successful he opens his own garage would most likely say that his training "fit" his current managerial position. A German would not. This difference in definition should be kept in mind; it may soften some of the criticism although we do not believe it alters the ultimate analysis and conclusions of this paper.

[**] The actual question is a followup to an open-ended inquiry about current occupation. The respondent is then asked: *Ist das Ihr erlernter Beruf? (1) Ja (2) Nein (3) Derzeit in Ausbildung (4) Habe keinen Beruf erlernt.* Is this the occupation you have been trained for? (1) Yes (2) No (3) Currently in training (4) Have not been trained for an occupation.

Age and Employment Tenure Differences

We expect older workers will be less likely to be in jobs that fit their vocational education or to move from a job that does not fit to one that does. This decline in fit with age may be attributed to two distinct forces. First, the skills acquired during one's vocational education may lose their value and relevance, particularly in the face of changing technology. Second, the relative importance of vocational education in the stock of human capital of older workers diminishes as the value of other forms of education and training—such as accumulated work experience, on-the-job training and continuing education—increases. As figure 2 depicts, the importance of one's vocational education relative to other resources is not fixed: Vocational education is likely to have its greatest impact entry into the labor force; its effects then presumably weaken over time as training ages and the stock of resources acquired on the job increases.

The relationship between employment tenure and fit is more complicated. If one simply looks at whether or not there is a fit between vocational education and employment in a cross-section of the population, one is likely to find a positive relationship between employment tenure and fit. However, we suspect this link is a matter of association and not causation. Once people have found a job that uses their training and provides a reasonable return to their human capital, there is little incentive to change jobs. Thus, individuals with relatively long employment tenures should have good fits, but this is likely to be a consequence and not a cause of a good match between training and employment. By contrast, viewed dynamically, employment tenure may be negatively associated with movement into fit: The longer people stay in a job that does not fit, the greater will be the contributions of their accumulated on-the-job training and experience to their skills. Over time, the importance of these forms of human capital outweigh any possible benefits to be realized by moving to a job that better fits their vocational education.

Our initial set of analyses examines the effects of individual and structural characteristics on the probability that a person has a job that fits his or her vocational education. Table 3 presents results of logistic regression models of fit for 1987, the midpoint of the observation period, estimated separately for men and women.[20] For most readers the value of logistic regression coefficients will have little intuitive meaning, but positive coefficients indicate variables that increase the likelihood of fit; negative coefficients decrease the likelihood. A coefficient flagged with an asterisk indicates the magnitude of the coefficient is such that one may be reasonably confident the observed effect is not a random result simply due to the use of sample survey data.

Looking at the results for men in table 3, among the individual-level variables, the coefficients for age (negative) and employment tenure (positive) are significant and conform to our expectations. Again, the positive association between employment tenure and fit probably reflects the disinclination of most persons to move out of fit, rather than the likelihood of fit actually increasing with time on the job. The coefficients for age (negative) and time on the job (positive) are statistically significant and, as was the case with men, conform to our expectations. Table 3 further indicates the other individual-level variables are less strongly related to the probability of fit for women than for men.

In a second set of analyses we take advantage of the longitudinal character of the GSOEP data, and ask the question: How do people get into jobs that fit their vocational training? We employ a discrete time event history approach, also estimated using logistic regression techniques, where the event is defined as movement from a job that does not fit someone's vocational education to one that does. The discrete time period is the 1-year interval between interview waves. The group includes all persons employed in a job that does not fit their education at the start of the interval, as well as persons in training at the start of the interval.

Estimated coefficients from our event history models are presented in table 4. Perhaps most importantly, for men as well as women, one notes a strong positive relationship between being in vocational education at the start of the interval and movement into a job that fits one's training; this suggests that obtaining a job that fits one's training is significantly more likely during the year training is completed than later in one's career. Once the importance of the initial year following training is taken into account, the coefficients for age and time on the job—both highly significant in our cross-sectional models of the incidence of fit—are relatively weak in our longitudinal models of movement into fit. Taken together, these findings indicate the time immediately following completion of one's vocational education is crucial for obtaining employment in a job that fits one's training.

Vocational Education and the Acquisition of Specific and General Skills

The incentives to find a job that closely fits one's vocational education depend partly on whether the skills acquired during one's training are general enough to be applied in a variety of jobs or are specific to a single occupation. If the credentials and skills acquired through vocational education are only relevant to a narrow range of employment situations, finding work that fits one's training is crucial. By contrast, if the acquired skills and credentials lend themselves to many employment situations, fit may be of much less importance.

We hypothesize that the generality of training—and thus the likelihood of fit—will be affected by the *type of vocational education* a person has received. In particular, we expect the acquisition of general skills is significantly facilitated by firm-based instruction, and graduates of the dual system should find themselves under less pressure to find a job that exactly fits their occupational training. Put differently, because of the range of general skills acquired through apprenticeship training, vocational education received in the dual system is likely to be of value in a wider range of occupations—including some that do not fit their training.

Graduates of the dual system are particularly likely to acquire attitudes and general skills that retain much of their value even if an individual changes occupations. Participating in an apprenticeship leads to a sense of control and competence, the tendency to view employment as a team endeavor, and an ability to learn flexibility and to execute tasks.[21] During the course of an apprenticeship a young person also learns the worker role: to live by the routines of the workday; to submit to authority; and to value the rewards that accompany successful completion of a task.[22] Appropriate worker behavior and attitudes are likely to be acquired during an apprenticeship due to the realism of experiential learning, particularly through the use of the same rewards and sanctions that are found in the workplace. Because they can use the skills they have acquired in many occupations, we anticipate graduates of the dual system will not be more likely to report they are working in the specific occupation for which they were trained.

The descriptive statistics in table 2 on the frequency of different types of vocational education confirm the central importance of the German dual system. Over three-quarters of the persons in our sample who had some form of vocational education and were employed in nonsupervisory positions had been trained in the dual system. Table 2 also shows there are clear differences in the types of vocational education received by men and women. While men are more likely to have participated in an industrial apprenticeship, the bulk of the women have been trained for commercial occupations (particularly clerical and sales positions). Women are also more likely than men to have received school-based forms of vocational education (i.e., *Berufsschulen* and *Schulen des Gesundheitswesens*).

The cross-sectional analyses of the incidence of fit summarized in table 3, indicate that for men fit varies significantly according to type of vocational education. Male graduates who completed either a commercial or an industrial apprenticeship were less likely to be employed in a job that fits their education than the reference category (i.e., persons who completed one of the other, school-based forms of vocational education). This finding conforms to our expectation that obtaining a fit between employment and vocational education is less critical for persons with apprenticeship training than for those with school-based vocational education. This expectation is based on the view that apprenticeship training is more likely to provide general skills, which makes attaining a fit between education and employment less critical. On the other hand, the probability of fit for women does not systematically vary with whether their vocational education is school-based or an apprenticeship or their apprenticeship is industrial or commercial.

Our longitudinal analyses—which capture the rate with which persons employed in jobs that do not fit their education subsequently move into jobs that do—also indicate graduates of the dual system are not particularly inclined to find employment that matches their training. In fact, men who completed an industrial apprenticeship move at a significantly slower rate into employment that matches their training than men with school-based vocational education.

Structural Determinants of Fit

Labor market structures—such as firm size, industrial sector, and general and regional fluctuations in the business cycle—have been shown to affect the likelihood of obtaining a job after leaving vocational education, as well as continued employment within specific segments of the labor market. We believe these structures also affect whether individuals can obtain employment that fits their training.

Occupational Groups

There are three broad types of positions within the German occupational structure (excluding trainees and self-employed persons): blue-collar workers (*Arbeiter*), white-collar workers (*Angestellte*), and civil servants (*Beamte*). The blue-collar and white-collar distinction has a long history in Germany and is clearly codified in legal regulations regarding social insurance and labor law.[23] The distinguishing feature of blue-collar work is it typically involves physical labor rather than the intellectual effort characteristic of white-collar work. However, this does not mean blue-collar work is necessarily unskilled, especially in Germany where the apprenticeship system has deep historical roots in the training of skilled craftsmen. Though technological change has increasingly blurred the distinction, blue-collar workers are typically closer to the productive process and their on-the-job activities are more clearly defined.[24] Just as the duties and requirements of white-collar occupations are more flexible than those in blue-collar occupations, the training for white-collar occupations is less specific—for example, a clerical apprenticeship is considered the appropriate vocational education for many white-collar occupations. Regardless of the type of vocational education one has, the broad categories used to define white-collar jobs, as well as white-collar vocational education programs, are likely to increase the probability individuals will report a match between education and employment. Hence, we expect white-collar workers to be more likely than blue-collar workers to report a good fit between training and employment. A higher incidence of fit is also likely to be found among persons in civil service positions owing to the greater control over hiring qualifications exerted by the state bureaucracy.

A striking sex difference in the occupational positions typically occupied by German men and women may be noted in the first two columns of table 2. Just over half of the men (56 percent) were in blue-collar positions (*Arbeiter*), while the bulk of the women (80 percent) were in white-collar positions (*Angestellte*). The origins of these occupational differences are suggested by the third column of table 1, which gives the proportion of women in the 16 most common apprenticeship categories. Nearly all these apprenticeship courses are characterized by extreme sex segregation, particularly among blue-collar workers. Not only are men with vocational education more likely to be employed in blue-collar occupations, but the jobs they commonly hold (e.g., machinists, electricians, and precision metal workers) are very different from those held by women, who are generally found in low-prestige blue-collar service occupations (especially in personal-care occupations—waitresses, janitors, and hairdressers). Women were also far less likely (3 percent) to be in civil service positions (*Beamte*) than men (11 percent).

Contrary to our expectations, we did not observe consistent differences in fit for men in blue-collar, white-collar, and civil service positions. Women in white-collar and civil service occupations were significantly more likely to have jobs that fit than women in blue-collar occupations. As we have seen, most women are in white-collar positions—more specifically, women trained in the dual system were most likely to participate in either clerical or sales apprenticeships—and these women are more likely to be employed in jobs that fit their training. Women who are employed in traditionally female occupations are thus more likely to use their vocational education.

Firm Size

Our expectations are mixed with regard to the effects of firm size on the fit between vocational education and employment. On the one hand, the chances of a close fit may tend to increase with firm size, in part because larger firms can provide more opportunities for people to find jobs that match their training.[25] On the other hand, individuals in larger firms may be more willing to work in jobs that do not match their training because of the greater earnings, job security and other job rewards bigger firms provide.[26] Moreover, individuals employed in large firms may be less likely to report a good fit because of the greater division of labor in larger firms: Workers performing very narrowly defined tasks may be less likely to perceive a match between their training and employment because they feel their employment is so specialized it does not make full use of their training.

Table 2 shows that the distributions of men and women also differ with regard to firm size: Well over one-third (37 percent) of all men are employed in very large firms (over 2,000 employees) as compared to under one-fourth (22 percent) of all women; meanwhile the proportion of women working in firms with fewer than 20 employees is twice as large as the proportion of men employed in small firms. This difference may be attributed, in large measure, to the different industrial sectors in which German men (manufacturing) and women (service) work.

The results in table 3 indicating the effects of firm size on the incidence of fit clearly show men employed in larger firms were less likely to occupy a position that fits with their vocational education. A negative relationship is found for women as well, but it is not statistically significant. The effects of firm size on movement into fit are also somewhat different for men and women. Men who are employed in larger firms are not only more likely to have jobs that do not fit but also to move more slowly into jobs that do. By contrast, women in the largest firms are no less likely to move into employment that fits their training than women in the smallest firms.

Opportunity Structure

Outcomes of matching persons to jobs are affected by the opportunity structure, which reflects the number and type of vacant positions on the one hand and one's human capital relative to the resources of other candidates for employment on the other.[27] The number of vacant positions and the available pool of candidates with the training to fill them are clearly key parameters affecting the probability any candidate will be able to obtain a job that fits his or her training. To control for shifts in the opportunity structure—over time as well as between occupations—we used data compiled yearly by the German Central Statistical Office in its *Statistisches Jahrbuch* series.

As figure 3 shows, there is considerable variation in our opportunity structure measure during the period represented by the GSOEP. The solid line—representing the average ratio of unemployed persons to available jobs—moves up over time in a cyclical fashion with peaks of increasing amplitude.* The other curves on figure 3 represent the occupation-specific opportunity structures for selected occupational groups. The changes over time are most extreme for those with the least education (unskilled laborers), while the fluctuations are more moderate for skilled blue-collar occupations (e.g., metal workers) and are particularly small for university-trained professionals (e.g., engineers).** This suggests human capital and skills tend to buffer individuals from changes in the opportunity structure. Despite the overall trend toward a less favorable opportunity structure, the second half of the 1980s was a time of improving job opportunities, as the supply of available workers fell relative to the occupation-specific indicator of unmet demand; for example, while there was an average of 21 unemployed persons for each available job in 1985, this ratio had fallen to 6.5 by 1990.

In our analysis of the incidence of fit (table 3) this indicator of current, occupation-specific opportunity structure is not significantly related to fit for men: The probability of being in a job that fits one's training appears to be unrelated to the current ratio of unemployed persons to available jobs for a given occupational group. Compared with men, however, the probability of women being employed in a job that fits their vocational education appears more susceptible to fluctuations in the opportunity structure.[28]

On the other hand, in our longitudinal analyses of men's movement into fit there is a significant negative coefficient associated with the opportunity structure. The probability of a man's being in a job that fits his vocational education does not systematically vary with employment opportunities; however, if a man is not in a job that fits his vocational education, the probability of moving into a job that does fit is lower when the occupation specific ratio of unemployed persons to available jobs is higher. In the analysis of movement into fit, the opportunity structure coefficient for women is also negative but not statistically significant.

Occupational "Cultures of Training"

As table 1 indicates, occupations in Germany vary considerably in the relative size of their apprenticeship programs, as measured by the ratio of trainees to the occupational group as a whole. A high proportion of trainees in a given occupational group may mean many individuals trained in this occupation will subsequently be forced to find employment outside the field in which they have been trained. At the same time, due to the large pool of trained persons, individuals who are employed in these occupations are likely to have the appropriate training. A large proportion of apprentices relative to an occupation's entire labor force suggests vocational education is historically and institutionally well established in this occupation: Training is likely to be standardized and occupation specific rather than firm specific. Persons should thus have better fits if they work in occupations with a strong culture of training.

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*This pattern is consistent with an interpretation of fluctuations in the opportunity structure as the outcome of a self-regulating equilibrium process. Individuals move out of an occupation if the ratio of unemployed persons to available jobs becomes too high; if the ratio becomes relatively small, then increasing numbers of workers enter the occupation. The increasing size of the fluctuations over the last two decades may reflect the growing proportion of the total labor force who are younger and are thus more willing and able to change occupations in response to current opportunities.

**While we believe this measure of the opportunity structure is better than unemployment rates, which are commonly used to represent opportunities, our measure has some limitations as well. In particular, its accuracy depends on the degree to which vacant jobs are reported to local labor offices and whether or not the reporting rate varies over time and between occupations. A recent study by the Federal Ministry of Labor (Leikeb and Spitznagel 1993) examines this question. Their conclusion was that there was considerable underreporting: Based on a survey of employers, nearly two-thirds of all vacant positions were not reported to the local labor offices, though underreporting was a greater problem for positions to be filled at a later date than for immediately available positions. Variation in the reporting rate over time was relatively trivial, though there was significant variation in reporting of available jobs according to occupational groups: unskilled and semi-skilled blue-collar positions were 1.4 times more likely to be reported than skilled blue-collar positions; unskilled white-collar positions were 2.3 times more likely to be reported than skilled white collar positions. Unfortunately these findings are not available for a significantly long time period or at the necessary level of occupational disaggregation to adjust our own measure. On the other hand, though adjusting for occupational differences in reporting would bring the curves representing the occupational opportunity structures in figure 3 closer together, important differences would remain (for example, the ratio between this measure for unskilled labor and that of metal workers consistently exceeds 1.4).

Data from the German Central Statistical Office regarding the ratio of trainees to the employed persons in various occupational groups are used to represent the strength of each occupation's culture of training. For men, we find support for our hypothesis on the importance of a culture of training: The ratio of apprentices to total employees for a particular occupational group is positively associated with the probability of being in a job that fits. But the results for women do not support the culture of training argument, as the coefficients estimated for this variable are generally small and negative. This may, in fact, be the result of the relatively limited variation in the measure of occupation-specific cultures of training for women, as noted above. Similarly, in our longitudinal analyses of movement into fit, for men we find a strong positive effect of our measure of the strength of an occupation's culture of training while only a weak relationship is found for women.

Consequences of Fit: The Effects of Fit on Earnings

Our analyses of the determinants of fit have implicitly assumed that fit matters. Given the widely observed relationship between formal education and earnings, there is every reason to expect individuals with dual system or school-based vocational education should earn more than individuals with no postsecondary education and the returns to some types of education are greater than others. As in our other analyses we distinguish between industrial and commercial apprenticeships, and school-based vocational education and university training—knowing full well there is considerable heterogeneity within each type. But our emphasis is on firm-based instruction as the common feature of all training that falls under the two apprenticeship training types.

We are not only concerned with the direct effects of different types of postsecondary education but also the degree to which these effects depend on the fit between education and employment. Based on the hypothesis that firm-based instruction provides strong general skills and positive worker socialization, we expect that the returns to apprenticeship training should not depend on whether an individual is in a job that fits while the returns to school-based training, which is more likely to lead to occupation-specific skills, should vary according to whether an individual is working in the occupation for which he or she has been trained.

To assess the consequences of fit, we estimated earnings equations using gross monthly earnings from 1984. We first regressed earnings on sets of individual and structural variables. All individuals employed in nonsupervisory positions, regardless of whether they had received postsecondary education credentials, are included in the estimation procedure. This yields estimated coefficients that can be interpreted as the value of each type of postsecondary education relative to no postsecondary education at all—controlling for secondary school track, age and employment tenure, and a set of structural variables including occupational group, firm size, opportunity structure, and culture of training. We then re-estimated the model adding six interaction terms indicating each of the three major types of vocational education (industrial apprenticeship, commercial apprenticeship and school-based vocational education) and whether or not the individual is working in the occupation for which he or she has been trained. A coefficient is associated with each interaction term representing the earnings advantage of each particular combination of vocational education and fit. For example, a man who completed an industrial apprenticeship and is employed in a job that fits his training, on average, earns 139.4 DM per month more than a man who is similar in all respects except he has not participated in any postsecondary vocational education.

Results from these models are summarized in figures 4 and 5. The reference group remains all individuals with no vocational education—for this group of persons there is no issue of fit. Estimated average monthly earnings are reported for each level of education. In addition, for each of the three main types of vocational education separate estimates are provided depending on whether or not there is a fit between education and employment.

The baseline results for men, represented by the darkest bars, indicate significant positive returns to industrial apprenticeships, school-based vocational education, and university degrees—after controlling for secondary school track, age, and years on the job, as well as the set of structural variables. A similar pattern is observed when the estimates are broken down by fit. Men who completed industrial apprenticeships or school-based vocational education and are employed in a job that fits their training earn significantly more than men with no vocational education. However, this is also true of men with industrial apprenticeship training or school-based vocational education who are employed in a position that does *not* fit their prior education.

Moreover, among men with apprenticeship training there is little apparent difference in earnings between men who are employed in jobs that fit their training and men who are employed in jobs that do not fit (represented by the gray and white bars). In fact, statistically testing the coefficients to assess the consequences of fit for each type of vocational education reveals that fit clearly does not have a significant impact on earnings for either type of apprenticeship training. Fit does seem to play a greater role in the returns to school-based vocational education; the difference in earnings between men with this sort of education who are employed in the area in which they have been trained and those who are employed in other occupations borders on statistical significance.[29]

We observe a very different pattern of effects for women (see figure 5). Average earnings (indicated by the black bars) differ little according to level of postsecondary education. Not only is this true for each of the major types of apprenticeship or school-based vocational education, but also for women with a university degree—they, too, do not earn significantly more than women with no postsecondary education. However, while fit did not significantly affect the earnings of men, for women there appears to be larger differences in earnings at each education level depending on whether or not there is a fit between education and employment. With women, tests of the coefficients for each of the three main types of vocational education indicate women with commercial apprenticeship or school-based vocational education who are employed in jobs that fit their previous education earn significantly more than women with comparable qualifications employed in positions that do not fit their education.[30]

Summary and Conclusions

Only about half of all German men—and about 60 percent of German women—currently have jobs that fit their prior vocational training. How can the stellar reputation of the German vocational education system be reconciled with the fact that a significant proportion of persons who complete a course of vocational education do not use the skills they have acquired on their subsequent jobs? Given the considerable costs of vocational education—the German Federal Institute of Vocational Training recently estimated the average yearly cost of an apprenticeship to be $8.300[31]—the possibility a good deal of this training may go unused merits closer consideration. In this paper, we have examined the individual and structural characteristics that affect the incidence of fit in a cross-section of Germans who have completed vocational training; and the ability of men and women to move from jobs that do not fit their training to those that do; as well as the degree to which earnings depend on the fit between education and employment.

The fit between vocational education and employment varies across career stages. Vocational education is likely to be more important as a source of skills early in an individual's career and to erode over time as original training becomes obsolete and other sources of human capital, such as work experience and on-the-job training, accumulate. Our cross-sectional analyses support the view that fit declines over men's and women's careers while our longitudinal analyses indicate a good fit is primarily an early career phenomenon. If a person does not quickly find a job that fits, other forms of human capital acquired on the job are likely to reduce the person's incentive to move into a position that matches his or her vocational education.

Men who completed an apprenticeship in the dual system, regardless of whether it was a commercial or an industrial apprenticeship, are less likely to be employed in a job that fits their vocational education than men who completed one of the other, school-based forms of vocational education. Furthermore, men who had completed an industrial apprenticeship—the most common type of training among men—stand out as moving less slowly into jobs that fit their vocational education. By contrast, there appears to be no systematic variation among women in the likelihood of fit or in the rate of movement into fit according to their type of vocational education.

Two different, though related, interpretations are consistent with the finding that the incidence of fit is significantly lower among men with dual system apprenticeship training. On the one hand, the lower incidence of fit may be attributed to the design of the dual system, which allows employers to create apprenticeship slots regardless of projected employment prospects for individual occupations. Our longitudinal analysis of movement into fit supports this: We found the rate of movement into a job that fits one's training varies negatively (and is statistically significant for men) with the opportunity structure, which reflects the balance between supply and demand for a particular course of training. On the other hand, a statistically significant negative coefficient for industrial apprenticeship training (among men) remains in our dynamic model even after controlling for fluctuations in the opportunity structure. This strengthens a second line of interpretation regarding the lower incidence of fit among men with apprenticeship training: Apprenticeship training provides general skills that have value outside the occupation in which one has been trained. Individuals with apprenticeship training—especially men with training in an industrial occupation—are thus less concerned with fit because their training is valued in a variety of jobs.

We also find men employed in larger firms are less likely to have jobs that fit with their vocational education. Moreover, once they are in a job that does not fit, men in smaller firms can obtain jobs that do so more rapidly than their counterparts in larger firms. Our data do not permit us to find out whether this relationship is due to the greater benefits large firms offer employees as compensation for occupying positions that do not fit their vocational education or whether fit is simply inherently more difficult to obtain in large firms because the organization's division of labor is more highly specialized. Women in small- to medium-sized firms are also more apt to obtain greater fits than those in the smallest or largest firm size categories.

Our measure of occupation-specific culture of training was also related to fit differently for men as opposed to women. For men, the ratio of apprentices to total employees for a particular occupational group was positively associated both with the probability of being in a job that fits and with the rate of moving into a job that fits. There is no association between culture of training and fit for women. The result for men supports our notion that occupations that train a relatively large number of young people also tend to hire from the ranks of their trainees. This does not preclude the possibility of over-training and that large numbers of trainees find subsequent employment in other occupations; indeed, this is the case. Nevertheless, these findings suggest persons with the appropriate vocational education are more likely to use their training in occupations with an established culture of training.

Our results are consistent with theoretical labor market models emphasizing that matching persons to jobs results from the interplay between structural and individual characteristics. We find the fit between training and job requirements depends not only on career stage and human capital investments but also on opportunity structures and organizational characteristics. This supports a vacancy competition interpretation of the value of human capital: The returns to investments in training are not fixed and automatic, but depend on the opportunities for individuals to utilize their human capital.

Our findings also underscore several themes that need to be developed in a more complete theory of matching persons to jobs. First, a given occupation's opportunity structure is not fixed, and this introduces a measure of uncertainty in all decisions regarding investments in training and other forms of human capital. The longer the length of training—and therefore the longer period of time between the decision to acquire a set of skills and the opportunity to utilize them—the greater the uncertainty. Second, our findings highlight the volatile nature of human capital. The value of human capital, including different types of vocational education and training, is not fixed but variable and changes as acquired skills become obsolete and other sources of substitutable human capital become available. The rate of obsolescence, as well as the speed with which other forms of human capital accumulate, affect the likelihood that the unused human capital of persons employed in jobs that do not fit will be put to use by moving to jobs that do fit. Third, the changing significance of the opportunity structure reminds us sociological theories of the labor market need to be sensitive to individual explanations as well. Though it is important to consider the individual within a concrete social context, our findings regarding the significance of career stage illustrate that variation at the individual level is also important.

Our findings regarding the consequences of fit for earnings highlight the degree of sex-based labor market segmentation in Germany. Simple descriptive data reveal men and women tend to find employment in different occupations and different sized firms, and enjoy different levels of compensation. More importantly, however, our findings show clear sex differences in the basic process linking human capital and labor market outcomes: For men participation in most types of postsecondary education has a significant positive effect on earnings, and these benefits are enjoyed regardless of whether a man is employed in the occupation in which he has been trained. For women there are no direct effects of postsecondary education on earnings, but women who are employed in the area in which they have participated in commercial apprenticeships or school-based vocational education earn significantly more than women with the similar training who are working in other fields.

The findings for men regarding the consequences of fit for earnings suggest important conclusions regarding the German system of vocational education. One might expect fit to be a critical factor in explaining labor market outcomes, especially among workers in nonsupervisory positions. The insignificance of fit indicates general skills and worker socialization are the primary benefits received by male graduates of the German vocational education system. The fact that the significance of fit is most obvious among graduates of the dual system further suggests that firm-based instruction—the characteristic element of apprenticeship training as compared with school-based vocational education—is particularly valuable for the general skills it confers rather than specific occupational skills. In this case, the difficult issue of coordinating vocational education with future labor market needs becomes far less critical. Similarly, these findings weaken the argument that too great an investment in vocational education is unwarranted in a rapidly changing economy because specific skills rapidly become obsolete.

The results for women do not lend themselves to ready interpretation. We believe this does not affect our general conclusions but is due to imprecise data regarding women and particularly the different ways they participate in the labor force. For the most part, men in the workforce are a homogeneous group; their jobs are always a major focus of their lives. There are, of course, women who view work the same way. But there are other women whose primary orientation is not toward work but toward family. They see their place in the workforce as a lesser part of their lives—as a temporary position until marriage and family; and as a necessary supplement to family income. The studies of the workforce we examined—in fact, most data regarding the workforce—group all women in a single category. If the data had distinguished between casual or secondary labor force participation on the part of women whose primary allegiance is to the family and labor force participation on the part of women uninhibited by family ties, we are confident our hypotheses would prove accurate for women in the latter group.

Our findings also suggest several guidelines for American policymakers hoping to learn from the German model. Taken together, these suggest efforts to improve American vocational education may be most effective if they are targeted at smaller firms and encourage youth apprenticeships in occupations with a currently favorable opportunity structure and an established culture of training. Since apprenticeship is most well established in the construction trades, a fruitful and timely approach may be to coordinate employment and training policies around rebuilding America's transportation infrastructure and other public works projects.

More generally, clearly defined efforts to encourage particular types of training in specific structural contexts are more apt to foster the use of training than are general policies supporting all types of training. Such steps are likely to require a national employment policy, not only to facilitate employment security but also to coordinate the development and operation of an effective vocational education system. European countries such as Germany and Sweden have had effective employment policies in this regard; by contrast, the United States traditionally has lacked such a policy.[32]

American policymakers also need to be aware of the extent to which the dual system has contributed to occupational sex segregation in Germany. As the initial decision point where young men and women are channeled into occupations, German apprenticeship training would be an ideal place to break through occupational sex stereotypes that predominate in the German workforce. However, the dual system has not been used that way. To the contrary, workforce data indicate there has been extreme channeling of workers according to sex (see table 1), and this channeling has contributed to the continuation of occupational sex stereotyping. This may now be changing; the roughly equal proportions of men and women currently in apprenticeship programs with promising occupational futures is a positive sign. Nonetheless, if an apprenticeship system based on the German model is adopted in the United States, program managers need to be sure it is not implemented in a discriminatory fashion. The German system has demonstrated long-term ramifications can be serious.

We recognize, finally, that fit should not necessarily be the primary goal of individuals' careers nor of a nation's vocational training policy. General skills and worker socialization are important benefits received by graduates of the German dual system, regardless of whether they obtain jobs that use their specific skills. This is particularly true in a rapidly changing economy; in such situations, specific skills quickly become obsolete, so a great amount of investment, by employers or employees, in training for specific, narrowly defined occupations may be unwarranted.

Appendix

Type of Vocational Education

We use a set of dichotomous variables to distinguish among three types of vocational education: (1) industrial apprenticeships (*gewerbliche/landwirtschaftliche Lehre*); (2) commercial or other apprenticeships (*kaufmännische/sonstige Lehre*); and (3) some other form of vocational education, but not an apprenticeship. The largest group of persons in the latter category are those who attended 1- or 2-year vocational schools without an apprenticeship component (*Berufsfachschulen*). This category serves as the reference group in our analyses to emphasize the contrast between the dual system and other forms of school-based vocational education. Each category includes a wide variety of apprenticeship programs, however we feel this heterogeneity is secondary to the basic distinction between school-based programs and those that add an apprenticeship component.

Secondary Educational Attainment

We also use dichotomous variables to distinguish among three categories of secondary educational attainment: (1) persons with a lower secondary degree (*Hauptschule*) (the omitted category in our analyses); recipients of (2) middle secondary (*Realschule*); and (3) upper secondary (*Gymnasium*) degrees. An additional variable indicates persons who also have a university degree, including persons trained at engineering and business management schools (*Fachhochschulen*) and technical universities (*Technische Universitäten*), as well as the traditional German universities (*Universitäten*). Respondents were assigned to the various educational categories based on reported educational attainment at the start of each observation period.

Occupational Position

We use three dichotomous variables—based on respondents' reports of their occupational position (*berufliche Stellung*)—to distinguish among blue-collar positions (*Arbeiter*), white-collar (*Angestellte*), or civil service positions (*Beamte*).

Firm Size

We measure firm size by a set of three dichotomous variables based on four firm size classes: (1) fewer than 20 employees (the omitted category in our analyses); (2) 20 to 199 employees; (3) 200 to 1,999 employees; and (4) 2,000 or more employees.

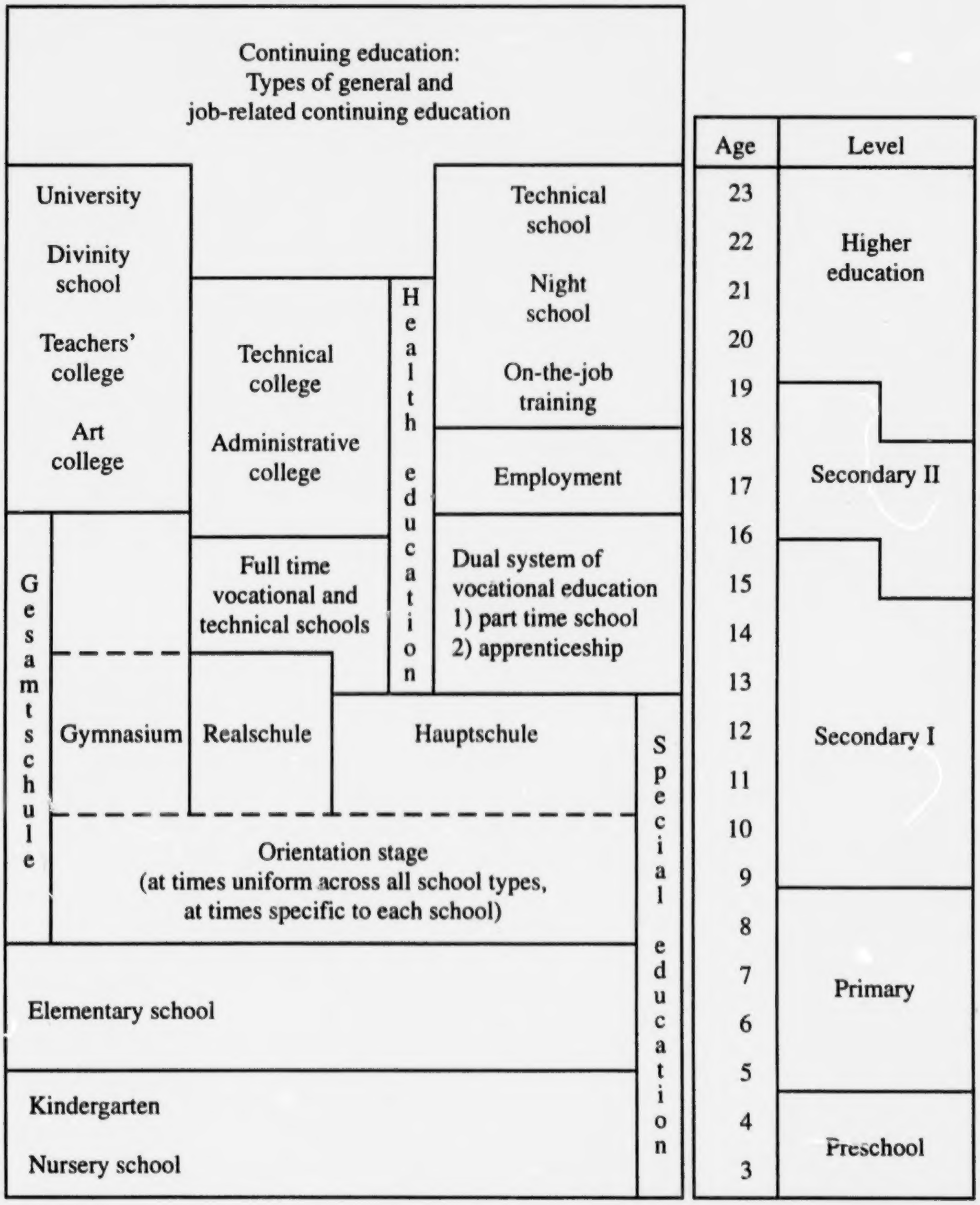
Opportunity Structure

Data from the German Central Statistical Office were used to create the measures of the occupation specific opportunity structure and the strength of each occupation's culture of training. The ratio of unemployed persons to the number of available jobs for specific occupation groups—each figure is recorded yearly by the Bundesanstalt für Arbeit (Federal Ministry of Labor) based on records of local employment offices—serves as the measure of the opportunity structure.

Occupational Culture of Training

The strength of each occupation's culture of training is indicated by the proportion of apprentices among each occupation's total labor force. The training and employment data used to measure the culture of training are reported at the occupational group (*Berufsgruppen*), while the unemployment and available position data used to describe the opportunity structure relies on a different set of codes (*Berufsabschnitten*). Respondents' reported occupations are available in the GSOEP public release files as two-digit International Standard Classification of Occupations (ISCO) codes as developed by the International Labor Organization. A conversion table was then developed to match data from the other sources to each respondent's ISCO code value.

Figure 1.—Structure of the West German educational system


Continuing education:
Types of general and
job-related continuing education
University
Divinity school
Teachers' college
Art college
Technical college
Administrative college
Health education
Technical school
Night school
On-the-job training
Employment
Gesamtschule
Full time vocational and technical schools
Dual system of vocational education
1) part time school
2) apprenticeship
Gymnasium
Realschule
Hauptschule
Special education
Orientation stage
(at times uniform across all school types,
at times specific to each school)
Elementary school
Kindergarten
Nursery school
Age
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
Level
Higher education
Secondary II
Secondary I
Primary
Preschool

SOURCE: Grund und Struktrudaten. Bonn: Bundesminister für Bildung und Wissenschaft, 1989–90.

Figure 2.—Changing importance of human capital components during career life

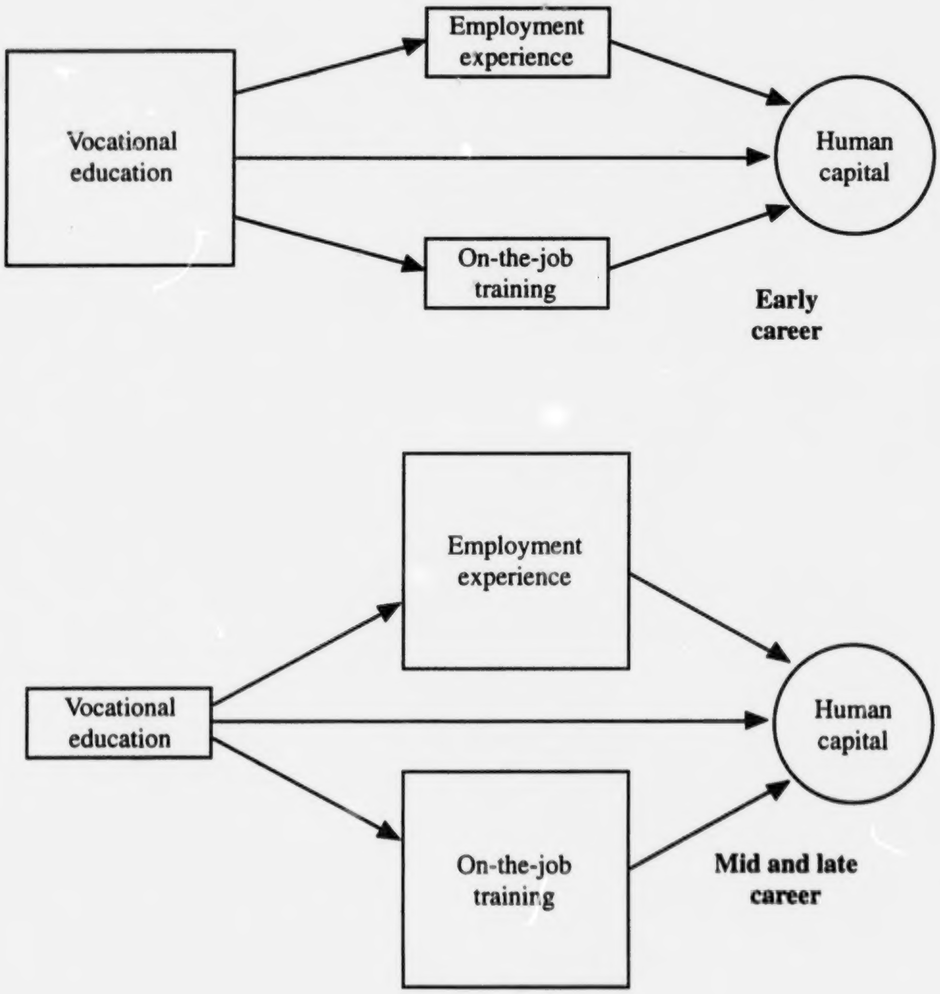
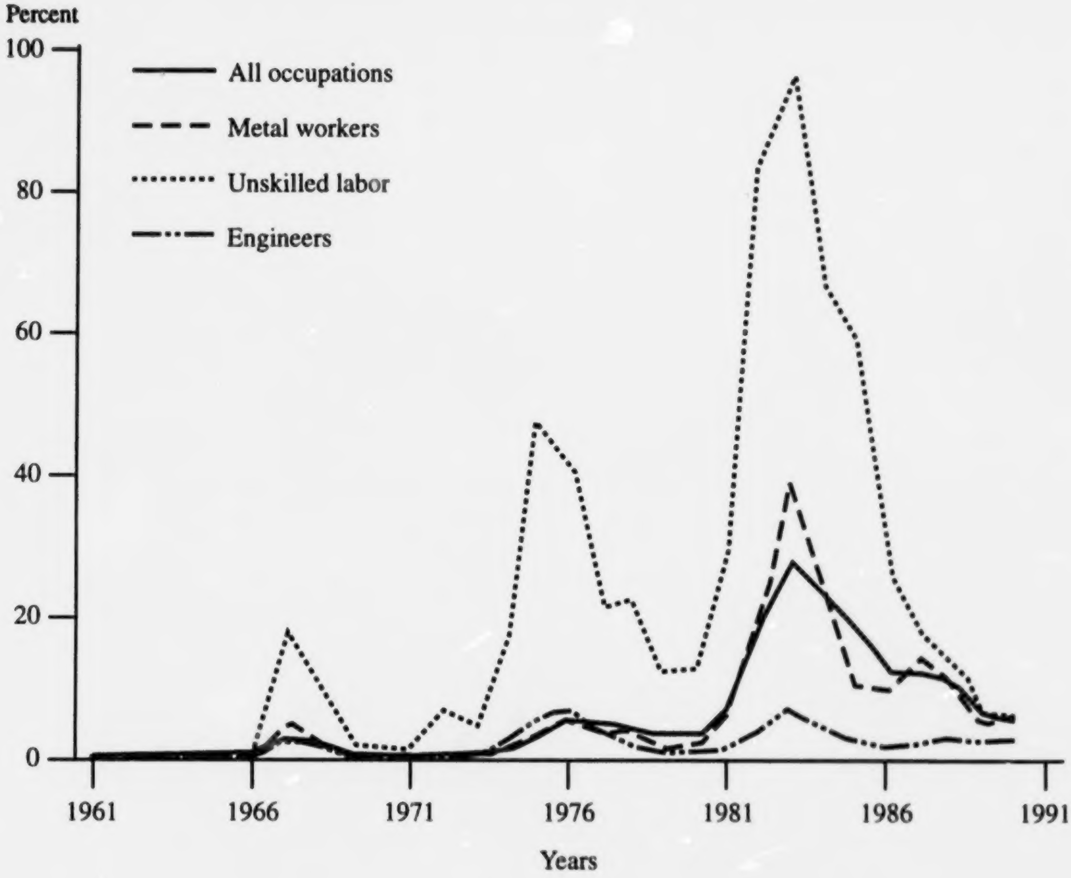
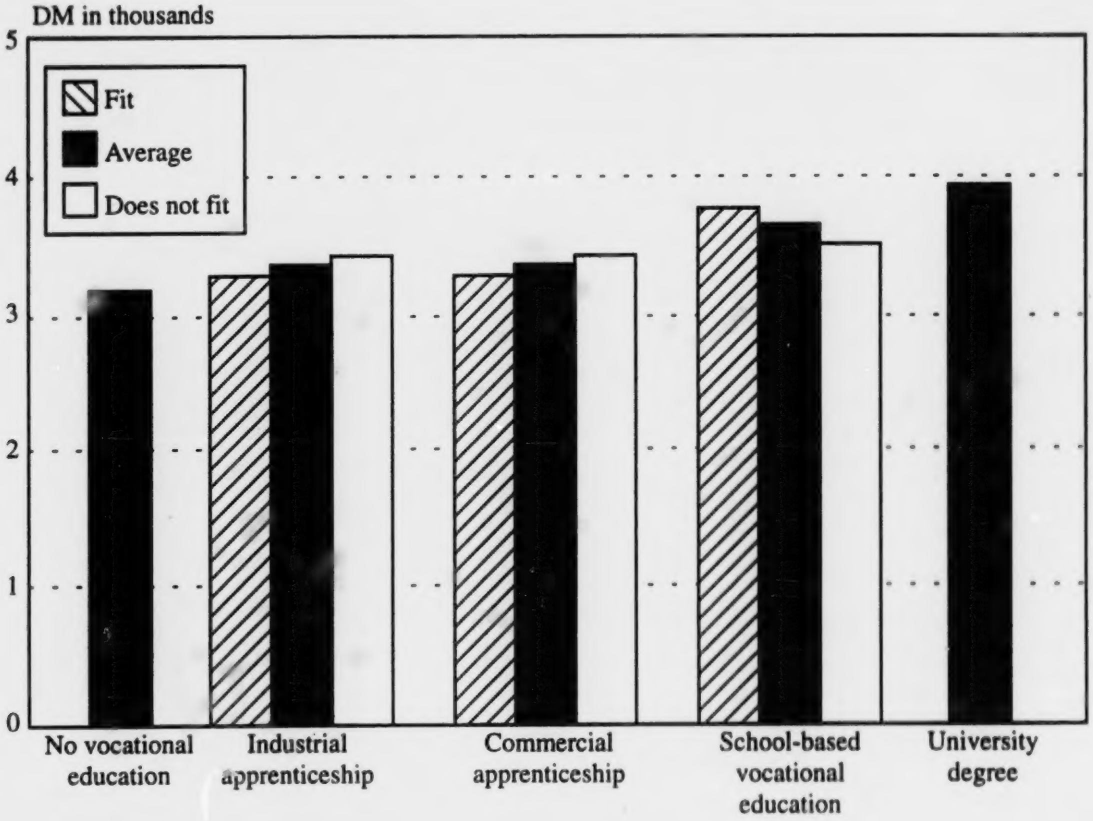

Employment experience
Vocational education
Human capital
On-the-job training
Early career
Employment experience
Vocational education
Human capital
On-the-job training
Mid and late career

Figure 3.— Shifts in the opportunity structure ratio of unemployed persons to available jobs in Germany: 1961–1990



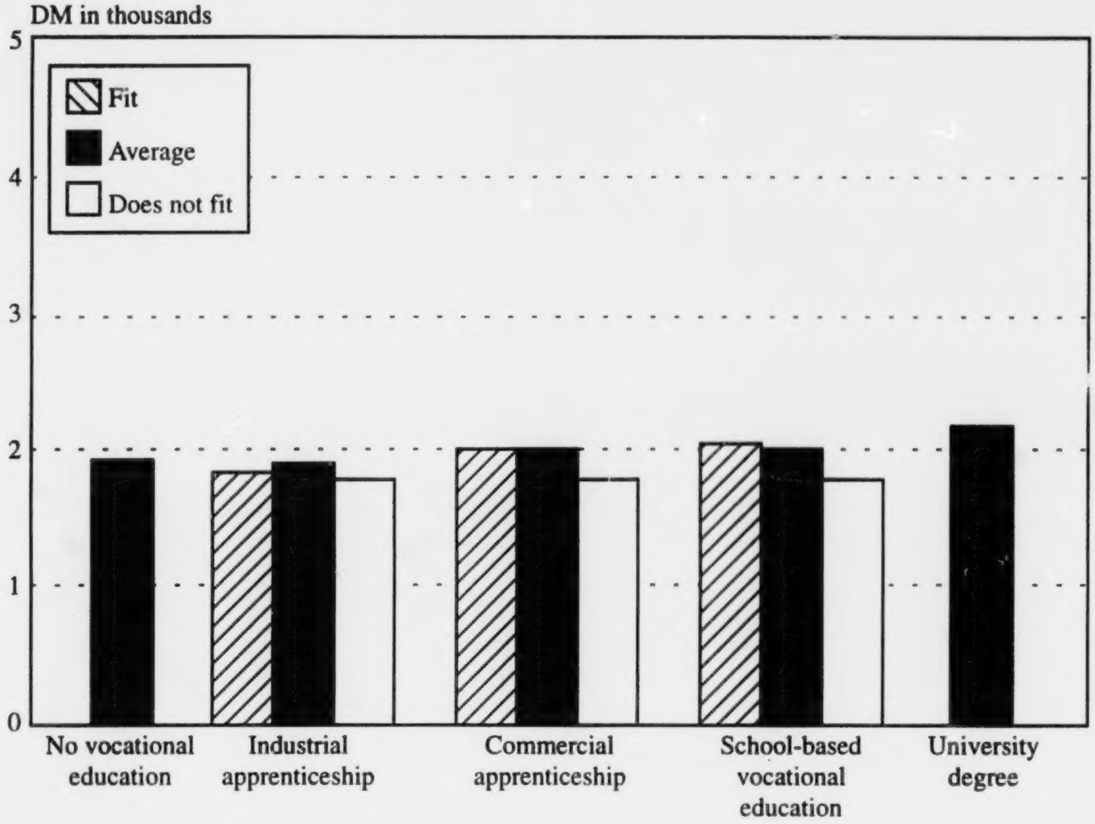
SOURCE: Statistisches Jahrbuch Für die Bundesrepublik Deutschland, Wiesbaden: Statistisches Bundesamt, 1961–1991.

Figure 4.— Effects of vocational education and fit on earnings: Gross monthly earnings of German men



SOURCE: The German Socio-Economic Panel (Waves 1–7), 1984–89.

Figure 5.— Effects of vocational education and fit on earnings: Gross monthly earnings of German women



SOURCE: The German Socio-Economic Panel (Waves 1–7), 1984–89.

Table 1.—Most common German apprenticeship areas

Area	Number taking certification examination	As percent of labor force	Percent women apprentices
Salesperson	118,049	5.6	71.1
Clerical worker	85,869	2.6	77.2
Electrician	57,230	7.8	2.0
Mechanic	48,440	7.8	1.5
Machinist	35,951	4.4	0.6
Medical assistant	29,672	3.2	99.9
Banking and insurance staff	24,774	4.0	53.3
Precision metal working	22,501	8.0	0.4
Personal care	21,911	9.3	96.1
Carpenter	21,522	6.2	5.3
Mason	20,656	4.6	0.1
Technical specialist	14,752	6.4	53.4
Painter	14,115	5.1	8.7
Clothing manufacturer	13,215	4.8	96.7
Baker	12,300	8.4	16.5
Gardener	11,038	5.1	53.6

SOURCE: Statistisches Jahrbuch für die Bundesrepublik Deutschland, Wiesbaden: Statistisches Bundesamt, 1985.

Table 2.—Means and standard deviations for variables used in cross-sectional[1] and longitudinal[2] models of the determinants and consequences of fit between vocational education and employment

Variables	Individuals		Person-years-at-risk	
	Men	Women	Men	Women
Individual				
Lower secondary degree	.78	.57	.86	.70
Middle secondary degree	.20	.38	.13	.28
Upper secondary degree	.02	.05	.01	.02
Dual system—industrial apprenticeship	.61	.16	.69	.20
Dual system—commercial apprenticeship	.22	.60	.20	.60
School-based vocational education	.16	.23	.10	.19
University degree	.01	.01	.01	.01
In training[3]	—	—	.01	.02
Current age	40.4	37.1	37.5	38.3
	(11.5)	(10.9)	(10.7)	(10.1)
Years on the job	12.0	8.6	9.2	6.4
	(9.9)	(7.6)	(8.7)	(7.1)
Gross monthly earnings	3,158	2,149	—	—
	(955)	(1,202)		
Structural				
Blue collar position	.56	.17	.53	.28
White collar position	.33	.80	.35	.71
Civil service position	.11	.03	.12	.01
Firm size less than 20	.14	.29	.09	.27
Firm size 20–199	.26	.26	.22	.32
Firm size 200–1,999	.23	.22	.26	.22
Firm size 2,000 or more	.37	.22	.43	.19
Occupational opportunity structure	13.6	13.6	11.35	11.28
	(7.8)	(3.6)	(13.9)	(9.9)
Occupational culture of training	.07	.06	.06	.06
	(.06)	(.03)	(.05)	(.03)
Fit between training and employment[4]	.49	.61	.02	.04
Number of cases	1,008	637	10,568	4,591

[1] See text for detailed explanation of variables. Cross-sectional models of the incidence and determinants of fit were estimated for each year 1984-90.
Means and standard deviations shown are for 1987.

[2] Longitudinal models of the likelihood of moving into a job that fits.

[3] Used only in the longitudinal models, this refers to training at the start of the interval.

[4] In the longitudinal models this is the proportion of observations with a move from non-fit to fit.

SOURCE: The German Socio-Economic Panel (Waves 1–7).

Table 3.—Logistic regression coefficients for fit between vocational education and employment regressed on individual and structural variables among men and women in GSOEP sample (1987) with any form of formal vocational education currently employed in nonsupervisory positions

Variables	Men	Women
Individual		
Middle secondary degree	.27 *	.13
Upper secondary degree	.18	.29
Dual system—industrial apprenticeship	-.42 *	-.15
Dual system—commercial apprenticeship	-.22 *	.03
University degree	1.11 *	.35
Current age	-.04 *	-.06 *
Years on the job	.04 *	.05 *
Structural		
White collar position	.03	.58 *
Civil service position	.18	1.40 *
Firm size 20–199	-.30 *	-.07
Firm size 200–1,999	-.57 *	-.10
Firm size 2,000 or more	-.44 *	-.11
Occupational opportunity structure	.02	-.06 *
Occupational culture of training	13.28 *	-2.47
Constant	.90	4.75
Log likelihood (l_1)	-600.1	-424.9
Pseudo-R^2 $[(l_0-l_1)/l_0]$	.14	.13
Number of cases	1,008	637

* $p < .05$ l_0 is the log-likelihood for the intercept only model, and l_1 is the log-likelihood for the full model.

SOURCE: The German Socio-Economic Panel (Waves 1–4). See text for explanation of variables.

Table 4.—Logistic regression coefficients for individual and structural variables used to model movement into employment that fits one's vocational education

Variables	Men	Women
Individual		
Middle secondary degree	.28 *	.33 *
Upper secondary degree	.80 *	.74 *
Dual system—industrial apprenticeship	-.25 *	.07
Dual system—commercial apprenticeship	-.05	.15
University degree	.43	.43
In training at start of interval	1.95 *	1.28 *
Current age	-.01	-.04 *
Years on the job	.00	.00 *
Structural		
White collar position	-.11	.05
Civil service position	.17	1.28 *
Firm size 20–199 employees	-.18	-.30 *
Firm size 200–1,999 employees	-.32 *	-.14
Firm size 2,000 or more	-.32 *	-.13
Occupation specific opportunity structure	-.02 *	-.01
Strength of occupation's culture of training	3.41 *	-1.25
Constant	-.61	2.24 *
Log likelihood (l_1)	-914.7	-484.0
Pseudo-R^2 $[(l_0-l_1)/l_0]$	.20	.32
Number of intervals	10,568	4,591

NOTE: Person-years at-risk based on the GSOEP sample of persons with any form of formal vocational education employed in nonsupervisory positions that do not fit their vocational education at the start of the interval.

* $p < .05$ l_0 is the log-likelihood for the intercept only model, and l_1 is the log-likelihood for the full model.

SOURCE: The German Socio-Economic Panel (Waves 1–7). See text for explanation of variables.

Notes

1. See Peter Schenkel, "West Germany's Dual Training system," *Vocational Education Journal* 63: 29–47, 1988.
2. The authors would like to thank the All-University Gerontological Center of the Maxwell School of Citizenship and Public Affairs at Syracuse University and the National Institute on Aging (Program Project #1–PO1 AG09743–01) for their efforts to make the GSOEP data available in the United States. Additional thanks are due the GSOEP staff at the Deutsches Institut für Wirtschaftsforschung (Berlin) for support and assistance with portions of the analysis.
3. Hans-Peter Blossfeld, "Changes in Educational Careers in the Federal Republic of Germany," *Sociology of Education* 63: 165–177, 1990.
4. Bundesminister für Bildung und Wissenschaft, *Grund- und Strukturdaten*, 1989–90.
5. Peter Raggatt, "Quality Control in the Dual System of West Germany," *Oxford Review of Education* 14: 163–186, 1988.
6. Nan Stone, "Does Business Have Any Business in Education?" *Harvard Business Review* 37: 46–62, 1991.
7. Christof Helberger, Ulrich Rendtel, and Johannes Schwarze, "Befufseinmündung von Jugendlichen als mehrstufiges Entscheidungsproblem," DIW Discussion Paper No. 54, 1991.
8. Collin Randlesome, "Making Middle Managers," *Journal of European* 14: 12–16, 1987.
9. Christel Lane, "Capitalism or Culture? A Comparative Analysis of the Position in the Labour Process and Labour Market of Lower White-Collar Workers in the Financial Services Sector of Britain and the Federal Republic of Germany," *Work, Employment and Society* 1: 57–83, 1987. Wolfgang Littek and Ulrich Heisig, "Competence, Control and Work Redesign: *Die Angestellten* in the Federal Republic of Germany," *Work and Occupations* 18: 4–28, 1991.
10. Deutsches Institut für Wirtschaftsforschung (DIW), "Qualifikationsstruktur des Arbeitskräftepotentials und Qualifikationsbedarf in Berlin (West)," *DIW Wochenbericht*, 1987.
11. Blossfeld 1991; Lane 1987.
12. Bundesminister für Bildung und Wissenschaft 1989.
13. Hamilton 1992.
14. Lempert 1990.
15. Lempert 1990; Bednarz-Brown et al. 1990.
16. Klauder 1987; Schlitzberger 1987; Klose 1986.
17. Details on the GSOEP, including a Users' Guide and other documentation, are available from the Deutsches Institut für Wirtschaftsforschung (Berlin). Non-German speakers are advised to contact the All-University Gerontological Center at Syracuse University for information in English. Descriptions of the GSOEP are found in Witte (1992) and Wagner, Behringer, and Burkhauser (1993).
18. Inspection of these cases indicates that many of the inconsistencies may be attributed to the relative imprecision of the two digit ISCO codes that are available in the GSOEP Public Use file.
19. The values of the means and standard deviations of our individual and structural variables come from the 1987 cross section, which is the midpoint of the period under consideration. Means and standard deviations for all cross sections (not shown) indicate that there was relatively little variation over time. The lone exception is the measure of the occupation-specific opportunity structure, which (as figure 3 indicates) steadily declined over the period in question. Further detail on our measures is provided in the appendix.
20. A series of cross-sectional logistic regression models were estimated separately for each year 1984 through 1990. The estimated coefficients were consistent in magnitude and direction throughout the time period.
21. Lane 1987; Hamilton 1987; Prais 1988.
22. Lerman and Pouncy 1990a, 1990b; Lempert 1990.

23. Littek and Heisig 1991.
24. Littek and Heisig 1991; Lane 1987.
25. Hamilton 1987.
26. Kalleberg and Van Buren 1993.
27. Sørensen and Kalleberg 1981; Sørensen 1983.
28. During the period of observation, the opportunity structure coefficients for women are consistently negative; in 4 of 6 years these coefficients are statistically significant.
29. For men comparing the coefficients for an industrial apprenticeship and employment that fits with an industrial apprenticeship and employment that does not fit yields a difference where T = –0.73; a commercial apprenticeship and employment that fits with a commercial apprenticeship and employment that does not fit T = –0.47; and school-based vocational education and employment that fits with school-based vocational education and employment that does not fit T = 1.63.
30. For women comparing the coefficients for an industrial apprenticeship and employment that fits with an industrial apprenticeship and employment that does not fit yields a difference where T = 0.59; a commercial apprenticeship and employment that fits with a commercial apprenticeship and employment that does not fit T = 2.84; and school-based vocational education and employment that fits with school-based vocational education and employment that does not fit T = 2.28.
31. Schenkel 1988.
32. Osterman 1988.

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3. Financing Apprenticeship Training: Evidence from Germany

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Introduction

Rising wage inequality, particularly the declining labor market prospects for those without a college education, has generated renewed interest in human capital investment in the United States, and attention has turned to the dual system of apprenticeship training in Germany as a model.[1] However, because any significant apprenticeship program in the United States cannot succeed without employers' self-interested support, it is important to have a full understanding of the structure of incentives undergirding the German system if we are to consider adapting it to our own institutions in the United States. In this paper we analyze special characteristics of the German labor market that may lead German employers to finance apprenticeship training despite the high cost of such programs. Specifically, we describe and investigate the following:

- *Union Collusion and Restricted Mobility.* German trade unions, through their influence over plant-level works councils, may limit the extent of "poaching" by competing employers, thereby providing a market within which firms are willing to make loans to workers to finance general training.[2]

- *Inflexible Wages, High Firing Costs, and Option Value.* German labor law makes employers pay a high price for laying off regular employees, but an employer is free to decide not to hire a particular apprentice after the training. Combining these high firing costs and industry-wide agreements specifying minimum wages bestows a high value on information about a particular worker's productivity. Apprenticeship training programs may therefore serve as an extended employment test for which employers are willing to share part of the cost.

- *High Costs of Mobility for Some Workers.* In the presence of high mobility costs for some apprentices, firms may provide the training as long as there are enough workers remaining to pay for training apprentices who leave. This explanation is potentially important for some firms, because a surprising 80 percent of all German workers report they have never moved to take another job.

Though none of these explanations is likely to be the sole reason for German firms' willingness to finance apprenticeship training, the foundation of the German training system may rest upon some combination of the above. Unfortunately, though, none of these conditions currently exists in the United States.

Presumably, the bottom line for the policy discussion in the United States can be found in the lifetime earning prospects of U.S. high school graduates. However, the earnings profile of U.S. high school graduates currently matches very closely with that of German apprentices. Although there could be many causes for this similarity, we find this to be a provocative fact given the much-cited differences in human capital investment in the two countries.

While German workers are investing in human capital, U.S. workers are searching for better matches between their skills and needs of employers. The payoff to such searching is limited in Germany, given the centralized wage bargaining institutions, which lead to a more compressed wage structure. Indeed, this may be one explanation for the greater degree of investment in training by German firms: The lower the chance an outside offer will lure an employee away, the greater the incentive to invest in training that employee. However, while the compressed wage structure may lead to more human capital investment in Germany, this characteristic of the German labor market may not be worthy of emulation in the United States; an unconsummated match between a worker's particular skill and an employer's specific need is just as much a loss to the economy as the failure to be able to take advantage of worthwhile training. The two labor market structures—active search with little human capital investment by firms in the United States, and less search with more investment in Germany—may simply be alternative routes to the same destination.

How High Are Employers' Costs for Apprenticeship Training?

We start by analyzing whether there is anything of interest to be explained (i.e., whether the German system reflects the microeconomics textbook example in which workers pay for their own training by accepting wages below their productivity.)[3] As Gary Becker argues in his classic work, the party writing the trainer's check need not be paying for the training.[4] Trainees could compensate their employers by accepting wages less than the value of the products they produce during their training. Indeed, since an apprentice's wage is typically between a third and a half of that of a skilled worker, net costs to firms of providing apprenticeship training may be zero because apprentices are a cheap source of labor for firms.[5] But this scenario does not seem to be true for all German firms. Although among smaller craft firms, the costs of apprenticeship training to employers have probably been overstated and may be close to zero, many large, industrial firms continue to make substantial investments in apprenticeships that require explanation.*

Since 1970, there have been two attempts in Germany to measure the size of firms' investment.[6] Both studies have tried to account for the types of costs and benefits involved for firms. It is simple to measure materials costs and apprentices' wages. But there are other costs much more difficult to capture. For instance, one must account for the wage costs of training personnel. Both studies simply asked supervisors to estimate how much time they spent instructing apprentices, which, when multiplied by instructors' wages, provided an estimate of the training personnel costs.

Finally, investigators attempted to measure the value of apprentice production during their training. Employers were asked to report the hourly productivity of an apprentice as a percentage of the productivity of a skilled worker and the wage of skilled workers at the firm. The value of apprentice production was estimated as the product of these factors.

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*On-site training accounts for only one part of the German dual system of apprenticeship training. The adjective "dual" is used to describe the system because apprentices typically attend publicly funded vocational schools one or two days a week in addition to working at the firms. Further, there are a host of coordinating activities performed by the federal Bundesinstitut fur Berfugsbildung (BiBB) and industry are legally required to pay. For instance, training firms have to demonstrate that their trainers fulfill certain requirements and that the enterprise can provide the training for the respective occupations. Therefore, the vocational schools themselves and the coordinating functions are shared collectively through various taxes. However, in this paper, we will explore the financing of the portion of the dual system training occurring on employers' premises. (A few small industries, such as construction, have resorted to taxing members of industrial chambers to pay for the centralized training centers where apprentices are trained. This is the exception, however. See Timmermann 1993.)

Table 1 reports the estimated costs of such training by sector in 1970 and 1980.[7] In both years, the net cost of training apprentices is estimated to be positive in all sectors, but the net costs were highest in the industrial sector: In 1980, the estimated net cost of training an apprentice was roughly $6,000 per year in the craft sector and $9,400 per year in the industrial sector in 1990 U.S. dollars. This difference was largely due to higher apprenticeship wages and costs of training personnel in the industrial sector.*

Moreover, these estimates likely overstate training costs in craft firms, suggesting the difference between craft firms and industrial firms is even greater.[8] The simple reason is that master craftsmen have considerable flexibility in scheduling training sessions. Much training may occur during slack periods of the day when the opportunity costs of the trainers' time is lowest. For instance, a master plumber might instruct apprentices on days when there are few calls to be made, on the way to a job or at the end of the day. Therefore, the *average* cost of a master craftsman's time probably overstates the actual costs of the training periods. In contrast, industrial firms usually employ full-time training personnel, who often train apprentices in classroom settings away from the production line. The reported costs for these firms are more likely to approximate the true costs of the training resources required. Therefore, the costs of apprenticeship training in craft firms are probably lower than reported in table 1 and, according to some observers, may be close to zero.**

In figure 1a, we plot the number of apprentices in the craft and industry/trade sectors relative to 1970.[9] *** Throughout the 1960s the number of apprenticeship positions in the craft and industry/trade sectors followed similar patterns. In the 1970s, however, there was a dramatic realignment: The number of apprenticeship positions in the craft sector grew by 70 percent, while the number of positions in industry/trade grew by less than 10 percent.

The overall growth of apprenticeship positions can be attributed to the dramatic growth in the number of 16- to 18-year-olds in Germany during the 1970s (see figure 1b). Craft firms were able to be the primary source of the growth in the number of positions available because their low net costs meant they were essentially "selling" such training, providing supervision in return for low-wage labor. On the other hand, the larger firms in industry and trade, which have much higher net costs, were apparently much less willing to open more slots.

Why German Firms Might Invest in General Human Capital

It is impossible to measure precisely how much training in Germany is firm-specific in nature and how much is generally applicable. However, we have reason to believe much training is general, due to regulations faced by training firms. Industrial chambers, which license firms seeking to hire apprentices, regulate the type of training that occurs in two ways. First, they develop the tests apprentices must pass to receive their skilled-worker certificate. These tests focus on general skills. Firms with consistently low pass rates have their licenses revoked. Second, the chambers often regulate the training content well. For instance, they may list the skills the training program must cover as well as, in some cases, the amount of time they are to receive in the curriculum.

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*A more detailed decomposition of gross training costs is given in table A.

**Though analysts in the United States have recently discovered the issue, the size of the net cost of apprenticeship training has been a matter of considerable debate in Germany for decades. For example, in the face of rising cohort sizes during the 1970s and the resulting need to create more slots, issues of financing and employer incentives were hotly debated. In a recent federal report on vocational training (Berufbildungsbericht 1993, p. 27) published by the Ministry of Education and Science, state governments were concerned about a rising number of firms that have cut apprenticeship positions due to cost considerations. For their part, labor representatives claim that firms have exaggerated the costs as they attempt to pressure employers to provide more training slots for potential members. On the other side of the debate, employers have overstated costs to promote a public image of social consciousness, bargain for greater public subsidies for vocational schools, and obtain more flexibility in the type of training they provide to apprentices. It is of some importance, therefore, that both panels charged by the government with evaluating the net costs of employer training have concluded that the net costs are substantial.

***The vertical lines represent periods of zero or negative growth in West Germany's Gross Domestic Product (GDP)—1967, 1975 and 1982. Note that in the 1975 and 1982 recessions and the years around them, the number of apprentice positions declined or slowed down. See further discussion below.

But the real question is why German companies would provide such training at all, since it is expensive, especially for industrial firms. Previous studies have pointed to three characteristics of the German labor market: union collusion, works councils, and restricted mobility; firing costs, uncertainty, and option value; and unobserved heterogeneity in worker's costs of mobility. We will examine each of these.

Union Collusion, Works Councils, and Restricted Mobility

In a recent study, David Soskice emphasizes the potentially important role of unions in financing apprenticeship training.[10] As a result of German labor law, wage floors are set by region and industry through negotiations between industrial unions and employers' associations. However, individual employers and works councils negotiate supplements to these minima at the firm level. The works councils in each of the plants are elected by employees and typically have strong informal ties to local unions. Although employers maintain control of hiring decisions, Soskice argues that works councils effectively limit the "poaching" of skilled workers trained elsewhere through their influence over these wage agreements. A union as a decisionmaking unit would have the incentive to foster this investment to increase the size of the stock of human capital it controls. In other words, according to Soskice, unions limit nontraining firms' ability to attract workers trained elsewhere.

However, the data are not fully consistent with this explanation. Turnover rates are much higher than popularly believed, even within the industrial sector. Figure 2 portrays the proportion of apprentices leaving the firm where they were trained by year of apprenticeship completion and timing of departure. Roughly 30 percent of all apprentices leave the firm where they were trained immediately upon completion of their training; at the end of the first year, 40 percent will have left; and within 5 years of the end of training, 70 percent of the typical firms' apprentices have left. As evident in figure 2, departure rates vary by sector, being highest within the craft sector and lowest in industry. This is consistent with the notion industrial employers have a much higher investment in apprentices than craft employers. However, even in industrial firms with more than 1,000 employees, 50 percent of those completing apprenticeships leave the firm where they were trained within 5 years.[*]

Though the exit rates reported here suggest apprenticeships clearly are not the beginning of a lifelong relationship between an apprentice and a firm, it is difficult to know how high they would have to be to rule out the Soskice hypothesis. For instance, 5 years may be long enough for firms to recoup their investments, and works councils need only limit mobility within this time. However, the average monthly earnings of a young skilled worker aged 20–24 was roughly 2,000 DM in 1985. Our earlier estimates suggested industrial firms have made a net investment over 2 years of 30,000 DM (roughly $18,600 in 1990) per apprentice. Therefore, young skilled workers would need to have productivity levels 125 percent more than their own salary to pay off the investment within 1 year, 48 percent more to pay off within 3 years and 30 percent more to do so within 5 years.[11] Although this last figure falls within the bounds of credibility, only 50 percent of these workers last 5 years even in the larger firms. Therefore, many apprentices seem to leave before they reasonably could have reimbursed the firm for the training.

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[*] Tables 2 and 3 report the proportion of those leaving by the size and sector of the training firm and the size and sector of the firm hiring them. Consistent with conventional wisdom in Germany, small craft firms are the biggest "exporters" of skilled labor and large, industrial firms are the largest "importers." Although firms with more than 1,000 employers generated only 6 percent of the apprentices that left their training firms, they hired 11.2 percent. Firms with 5–9 employs supplied 24 percent of the apprentices traded on the "open market," but hired only 12.2 percent of them. Only a third (36.8 percent) of those who left craft firms remained in the craft sector, while 60 percent of apprentices who left industrial firms remained in the trade or industrial sectors.

Wage Differentials for Apprentices Leaving the Training Firm. Are these exit rates evidence of poaching by other employers? Our data allow us to compare the earnings of the leavers and stayers.[12] As we will illustrate below, despite the possible interventions of works councils, it seems that those workers who leave within the first year after the end of their apprenticeships earn roughly 11 percent more on average than the workers who remain with their employers for a lifetime.

We estimated wage differentials for those departing the training firm at different points in their careers.[13] These are reported in table 4. (In all cases, the monthly earnings of those who have remained with the firm where they were trained is the reference category.) In the industrial sector, those leaving the firm within the first year earned roughly 17 percent more than those who remained with their employer. (Those leaving immediately enjoyed smaller differentials; we presume many of them were apprentices who were not offered contracts by their employers because they were the inferior workers.)

Unfortunately, we cannot identify whether the skilled workers are joining "free-riding" firms that do no training. However, it seems some firms, particularly medium-sized firms, provide little or no apprenticeship training.[14] Using results from a survey of 2,000 German manufacturing firms, we find about 20 percent of the firms with more than 100 and fewer than 500 employees provide no training at all.[15] The story is different for larger firms, since the proportion providing no apprenticeship positions is virtually zero. However, the *extent* to which firms train varies considerably. For example, while the average number of apprentices per 100 employees is 4.2 in this sample, about 40 percent of the medium-sized firms have fewer than two apprentices per 100 employees. Exploring the sources of variability in these data may provide additional clues.

Firing Costs, Uncertainty, and Option Value

Firms' ability to lay off workers has been heavily regulated under German law, although such regulations were loosened in 1986. From 1972 to 1986, employers laying off more than 10 percent of their workforce or more than 30 workers were required to negotiate a severance package.[16] (Firms unable to reach such agreements were required to submit to arbitration.) One study estimated settlements often equaled 15 to 25 weeks of pay for the average blue-collar worker.[17] As of the "Employment Promotion Act of 1985," these limits were loosened somewhat to apply only to layoffs involving 20 percent of the workforce or 60 workers.* Nevertheless, when it comes to layoffs, German firms clearly have less flexibility than U.S. firms.

The extent of regulation in Germany is less clear for individual dismissals. The works council must be consulted before any regular employee is dismissed. Although the employer need not receive the council's approval to fire an employee, the works council's finding may be used by the former employee in any subsequent legal challenge.

Whatever the law's current details, it is clear a German employer wanting to lay off or fire a worker faces considerable obstacles. But that same employer can freely decide not to hire an apprentice after training. Thus, regardless of any human capital developed along the way, apprenticeship programs may serve as a kind of employment test. It is expensive, but it may be more effective than a pen-and-paper test because training an apprentice allows an employer to observe the worker's capacity for *learning* new skills, not just his or her current skill level.

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*Employers are also required to provide minimum amounts of advance notice depending upon the tenure of the employee.

High firing costs also make apprenticeship programs valuable for a second reason. Apprenticeship programs provide flexibility in the size of a company's workforce; even if there were no information gathered during the training, apprentices become a buffer for adjusting employment levels with short-term demand fluctuations.[18] Indeed, there is evidence, as we saw in figure 1a, that the number of apprenticeship positions declined during the three recessions identified by the vertical lines in the figure.

However, the rigidity of the German labor laws can be overstated. First, with the employer supplements, the wage minima are often not binding. Therefore, there can be room for adjusting downward the wages of a worker who proves to be less productive than expected. Second, there are alternatives to apprenticeship training programs for employers to evaluate skilled workers. As a result of the Employment Promotion Act of 1985 (Beschaeftigungsfoerderungderungsgesetz), employers have been able to hire workers on fixed-term contracts of up to 18 months (before 1986, the limit was six months). Using such contracts has increased in recent years. Therefore, while apprenticeship programs may have some value for German employers because of the options such programs provide, this cannot be the full explanation for employers' willingness to invest in training because an apprenticeship program is not the only chance they have to learn about the productivity of specific workers before incurring substantial firing costs. And to the extent that the new law lowers the firing costs for new employees, one labor market force propelling the German apprenticeship system may have been weakened.

The Advantages of Residential Inertia: German Workers' Unwillingness To Move

A remarkably high proportion of German workers report they have never moved their residence to take another job. In 1986, for instance, 80 percent of German workers reported they have never done so. This fact may indeed contribute to German firms' willingness to invest in worker training. Despite turnover among employees, firms would invest as long as they could expect to be reimbursed by those who remain by paying them less than their actual productivity.

How much less? If 30 percent of German workers remain with their training firm, we calculate that workers who remain with their training firms would have to be paid $66,000 less than their productivity to make up their employer's total training cost.* Young apprentices would be willing to go along with this scheme as long as their *expected* earnings exceeded the earnings of an unskilled worker.

The estimates in table 4 reported that those who leave the firm where they were trained seemed to have higher earnings than workers who remained. This may, indeed, be the wedge that reveals how the system is financed. If the two groups of workers were equally productive, this difference in wages would provide an estimate of the size of the compensation being extracted from the workers who remain.** In fact, we estimate the present values of these differentials over 40 different age groups was roughly $45,000, in the same ballpark as the $66,000 calculated above.

For such an equilibrium to exist, firms and workers would have to be ignorant of any particular apprentice's costs of moving at the beginning of training. Otherwise, youth with high mobility costs would choose other types of human capital investments, such as university. Further, this would be only a partial solution to the problem of workers' being able to borrow from employers to pay for general training. Firms and workers would be willing to invest only in those skills that have a payoff higher than alternative investments; since workers only have a 70 percent chance of being paid, their productivity and firms need to be reimbursed.

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*If training costs an average of $19,800, the firm would need to collect $19,800 divided by .30, or $66,000.

**It is not clear how one might expect leavers' and stayers' productivity to differ. Leavers, after all, may simply be lemons that an employer was willing to let go or they may be the better workers lured away by higher wage offers.

Presumably, workers value their home surroundings to different degrees. For such a funding mechanism to work, it must be worth \$45,000–\$66,000 or more over a lifetime for 30 percent of such apprentices not to move. Though this may seem high for an American reader, there may be enough such workers in Germany where the ties of kinship and geography are much stronger.

Firm-Specific Training in Germany. Clearly, not all skills imparted during an apprenticeship are generally applicable outside the training firm. One imperfect test of the specificity of the training is to compare the proportion of leavers and stayers who report the training received during their apprenticeship was useful in their current jobs. In table 6 we report the proportion of former apprentices utilizing "very much" or "quite a lot" of their training in their current jobs. These are reported by sector and timing of departure from the training firm. In each sector, 75–85 percent of those who remained with the training firm report their apprenticeship training was useful in their current job. On the other hand, 45–55 percent of those who left the training firm report the training they received was helpful in their current job. This difference was similarly large in each sector, including crafts. Therefore, from this subjective measure, at least some training appears to be firm-specific.

Payoffs Are Similar

Presumably, the bottom line for U.S. policymakers is to enhance the earnings potential for U.S. high school graduates. But when one looks closely at the earnings of U.S. and German workers over their lifetimes, one finds remarkable similarities. Given the much-discussed differences in human capital investment in the two countries, one might expect the earnings profiles of German workers to be much steeper than American workers' if human capital investments led to growing productivity over a worker's lifetime. But this is not so. In figure 3 we plot the average weekly earnings of male high school graduates and former German apprentices by age.[19] Although we have attempted to consider differences in purchasing power, one should not take the similarity in the earnings levels too seriously.[20] Rather, it is the shape of the age-earnings profiles that is so striking. Earnings seem to follow similar patterns over the life cycle for U.S. high school graduates and German apprentices, at least among those working.

A potential explanation for the similarity of the earnings profiles is while German workers invest in human capital, U.S. workers are investing in job-search. Despite the surprisingly high turnover rates among German workers described above, turnover is even higher in the United States. Figure 4 reports the average job tenure and proportion of workers with less than 3 years' experience with their current employers for male high school graduates in the United States and apprentices in Germany.[21] The gap in average tenure expands as workers get older, and U.S. males are consistently more likely to have been in their jobs for less than 3 years than their German counterparts.

Particularly for young workers, job changes often involve increases in earnings. Indeed, Robert Topel and Michael Ward estimate at least a third of the wage growth achieved by male workers between the ages of 18 and 34 occurs at job transitions rather than within jobs.[22]

Why do we not see the same turnover in Germany? As we mentioned above, centralized wage bargaining compresses the wage structure in Germany relative to the United States. Figure 5 reports the cumulative distribution functions of log weekly earnings for male U.S. high school graduates age 25–40 and former apprentices in Germany of the same age.[23] (To avoid issues of comparability of U.S. dollars and German marks, both are reported as log deviations from log median weekly earnings.) The two curves represent the proportion of U.S. or German workers with earnings less than a particular fraction of the median earnings in the country. Because the U.S. line lies above the German line to the left of the center axis, a higher fraction of U.S. workers earn far below the median. The

U.S. line lies below the German one to the right of the center axis because fewer German workers earn far above the median. The higher variance of potential wage offers, the greater the payoff to job-search. So the high turnover of young U.S. workers seems to be a natural response to the wider range of wage offers available in the United States.

Yet there is likely to be a trade-off between human capital investments and job search: The higher the variance of potential wage offers, the more likely a worker is to find a better offer elsewhere, so the less likely U.S. firms and workers may be to invest in job training such as apprenticeship programs.[24] The U.S. system, with intensive search–low investment, and the German system, with low search–intensive investment, may simply be alternative routes to the same destination. From the point of view of economic efficiency, it is not at all clear the German system is superior because an unconsummated job match is just as much a loss to the economy as a worthwhile investment foregone.

Discussion

Providing apprenticeship training can be expensive, so any policy to develop school-to-work programs in the United States must be based upon a clear understanding of employer incentives. Above we outlined three reasons why German firms might accept part of the general training costs. Though each hypothesis was not fully consistent with the data, the system in Germany may be founded upon some combination of the three. In our interviews with employers, a fourth possibility was consistently mentioned: It is recognized as a social obligation in Germany to provide such training even if some firms are freeloaders. Although difficult to measure, one should not discount the role such a norm may play.

Unfortunately, neither this social obligation nor any of the three forces we explored exists in the United States. With unions representing only 15 percent of the workforce and enjoying much weaker legal standing, they could hardly be counted upon to limit employer poaching here. Further, as the experience of the 1980s has demonstrated, wages are more flexible in the United States. This fact, along with low firing costs, lowers the value of recruiting apprentices solely to find the most productive workers. Finally, there may be many too few workers with high mobility costs to sustain an equilibrium such as the one sketched above.

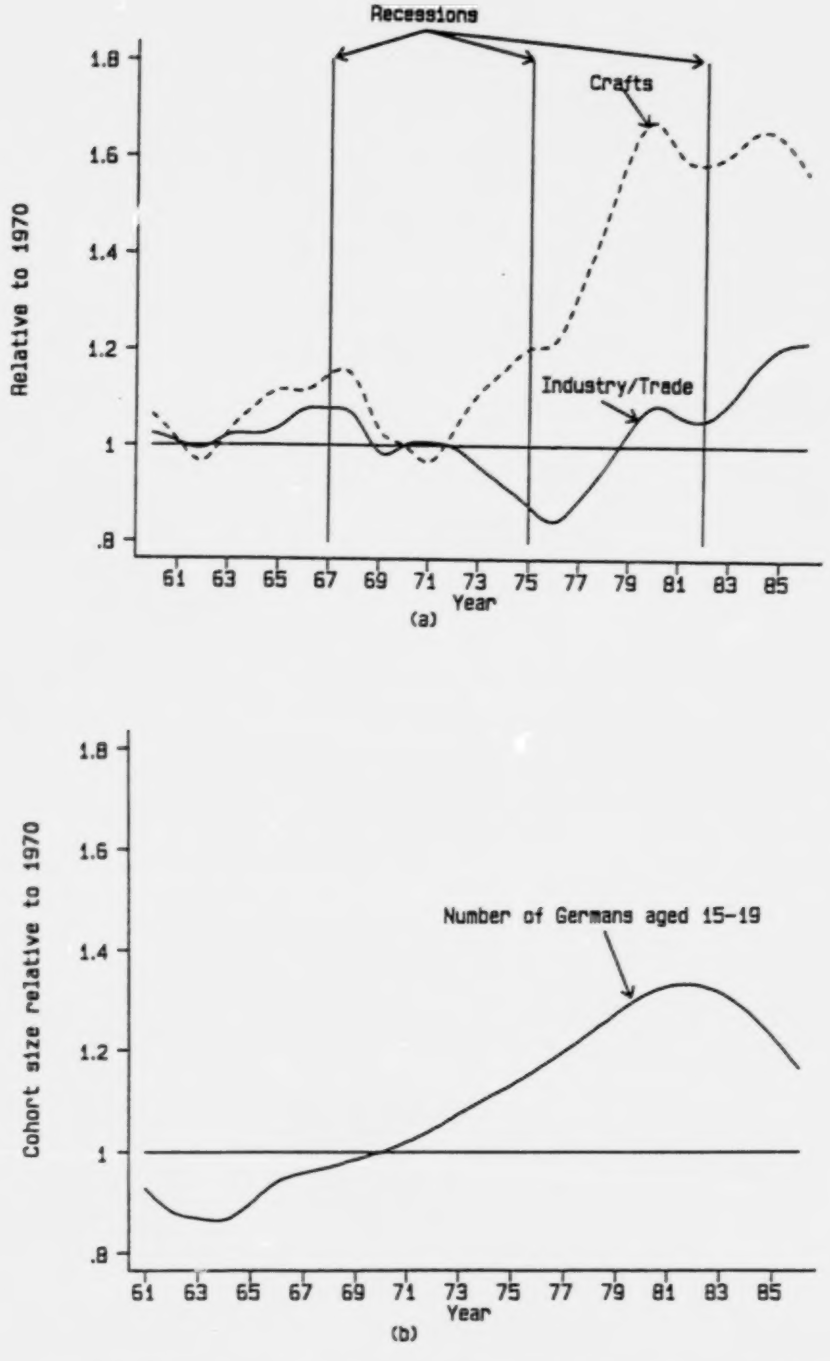
As for German firms' greater willingness to provide specific training, we hypothesized above that one reason for the relative lack of firm-specific training in the United States may lie in the wage structure: The higher the variance in wage offers, the higher the payoff to job-search; the higher the payoff to job-search, the lower the incentive for firms and workers to invest in specific skills.

With similar outcomes as seen in the earnings profiles of U.S. high school graduates and German apprentices, from the point of view of economic efficiency, the high-search-low-investment equilibrium may even be preferable to the low-search–high-firm-specific-investment equilibrium. Unconsummated job matches represent missed opportunities, just as the failure to make worthwhile firm-specific investments is a loss to the economy.

It is not a historical accident, therefore, that has U.S. firms investing less in general or specific training, so simply extolling the virtues of the German model, as has occurred in the current debate, is not likely to persuade U.S. firms to make such investments.

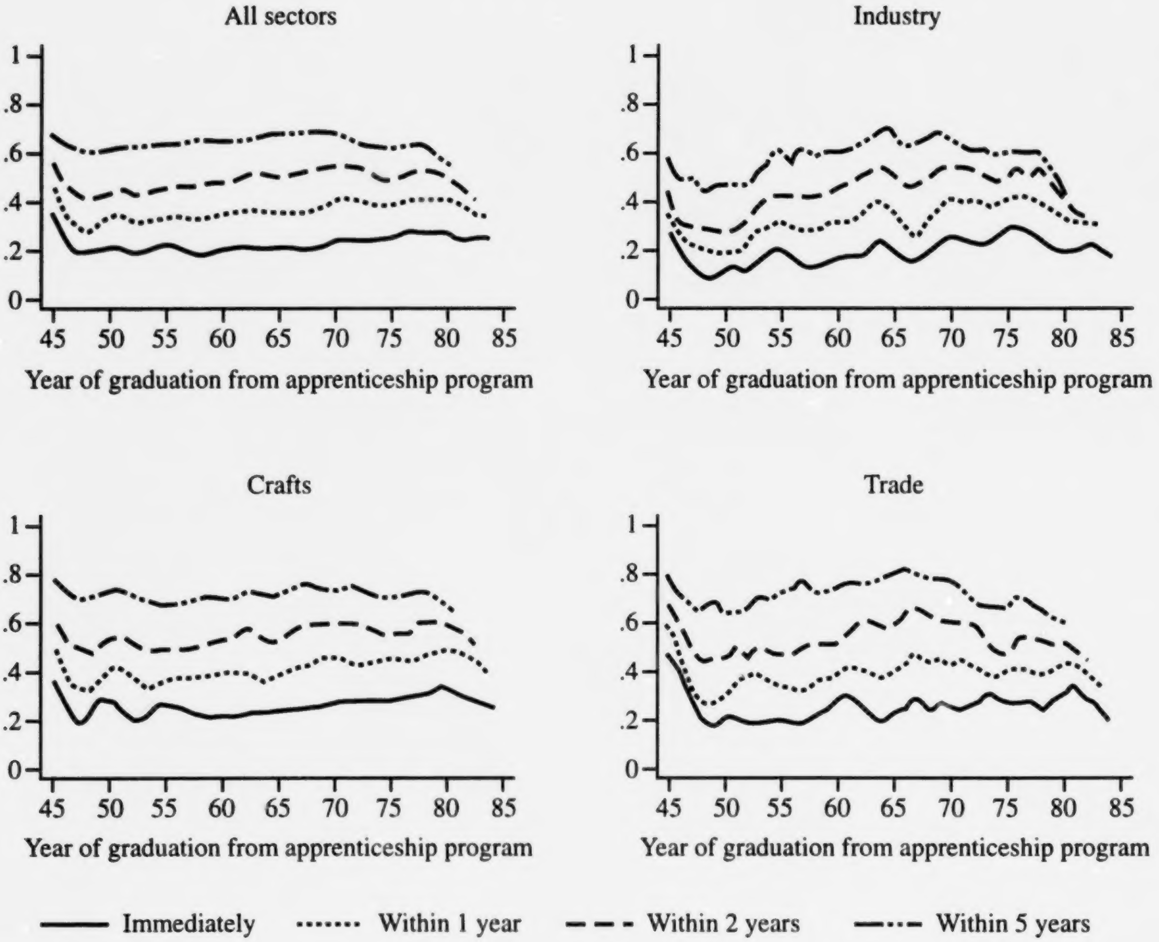
This may mean the United States should think twice before emulating the German dual apprenticeship program. However, it does not mean there should be no changes in school-to-work transition in the United States. Because the earnings differences between high and low levels of education expanded during the 1980s, we may still feel compelled to provide more opportunities for those at the bottom to develop skills. One group that will always have an incentive to make worthwhile general investments in their training are workers themselves. They may simply lack the access to capital markets with which to finance these investments. Community colleges and public universities currently provide such training. Unfortunately, public tuition levels have far outpaced increases in guaranteed student loan and Pell grant maxima during the 1980s. Focusing upon improving postsecondary education and removing obstacles to attendance may be more productive in promoting skill development opportunities than increasing apprenticeship programs. It certainly is more consistent with current U.S. labor market institutions.

Figure 1.—Apprenticeships by sector and number of German youth aged 15–19



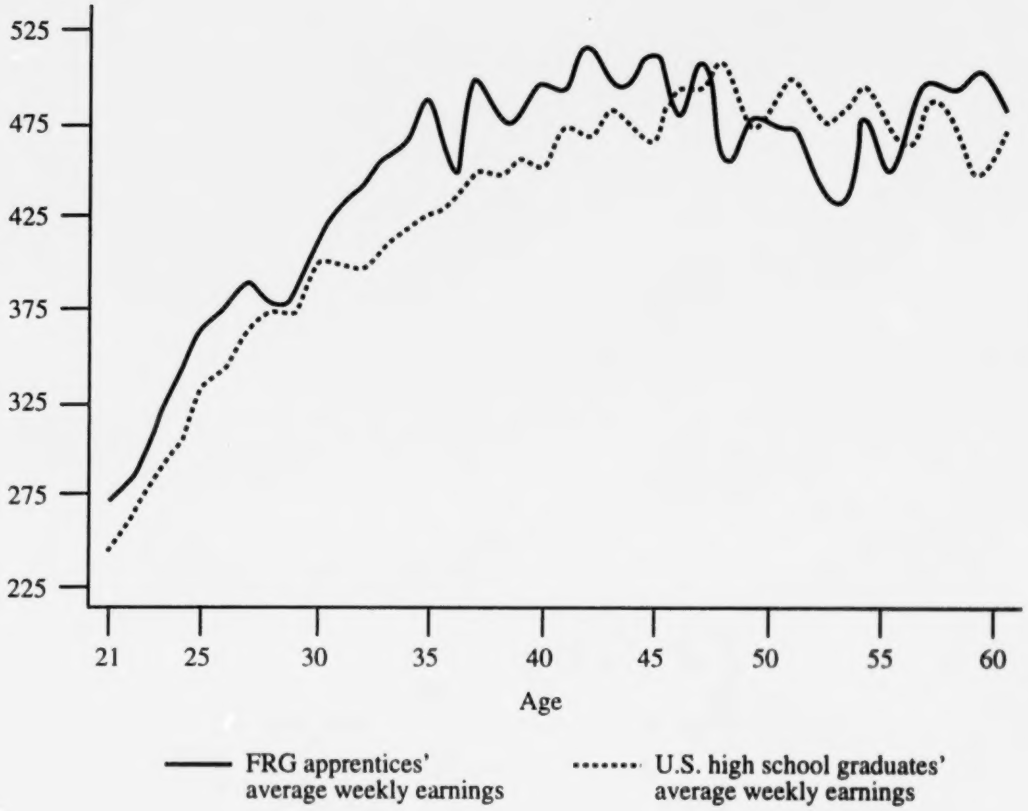
SOURCE: Statistisches Bundesamt, Bildung und Kulture, Fachserie 11, Reihe 3, 1986.

Figure 2.—Apprentices leaving firms by cohort and sector



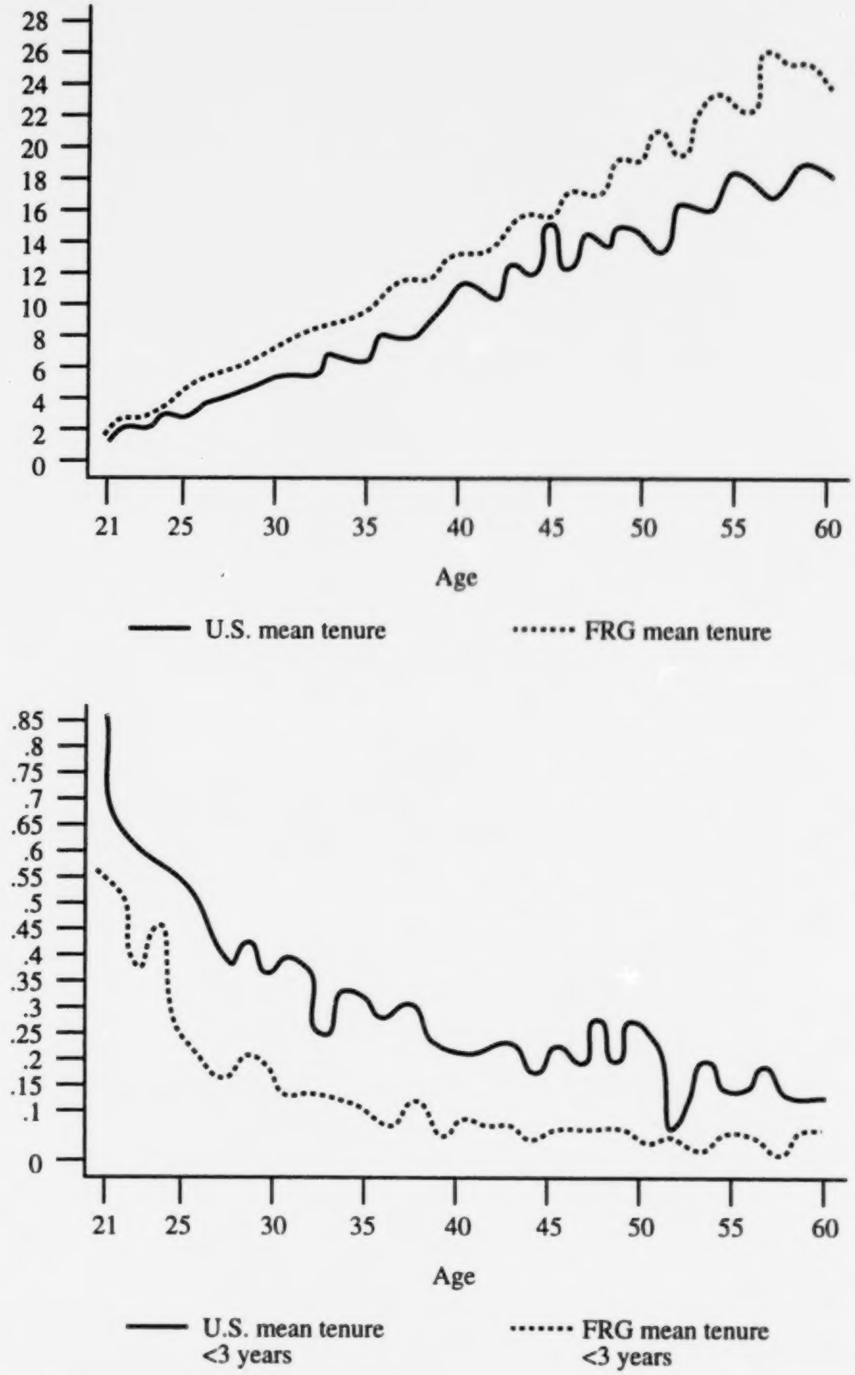
SOURCE: Qualifikation und Berufsverlauf, 1979 and 1985–86.

Figure 3.—Average weekly earnings of U.S. high school graduates and FRG apprentices



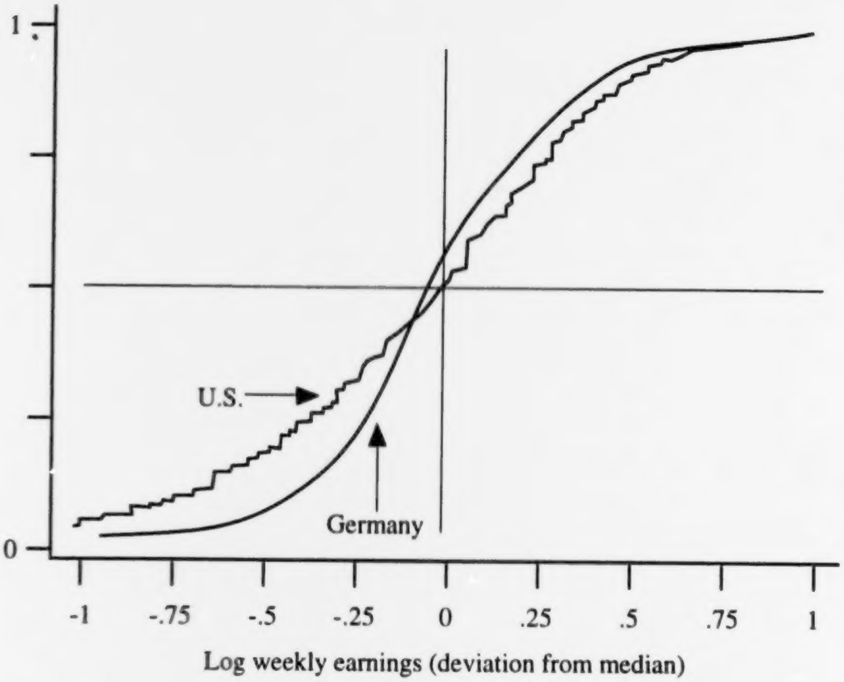
SOURCE: U.S. data from Current Population Survey, 1986; German data from Qualifikation und Berufsverlauf, 1985–86.

Figure 4.—Job tenure of male U.S. high school graduates and German apprentices



SOURCE: U.S. data from Current Population Survey, January 1991; German data from Qualifikation und Berufsverlauf, 1985–86.

Figure 5.— Distribution of log weekly earnings for male U.S. high school graduates and German apprentices aged 25–40



SOURCE: U.S. data from Current Population Survey, 1986; German data from Qualifikation und Berufsverlauf, 1985–86.

Table 1.—Costs of apprenticeship training, by training sector: 1971–72 and 1980 estimates

1971–72 estimates per apprentice and year

Training sector	Gross costs	Apprentice's productivity	Net costs	Net costs as percent of gross costs
All sectors*	$7,774	$3,518	$4,255	55
Industry and trade*	9,171	3,046	6,123	67
>=1,000 employees	10,600	2,640	7,959	75
< 1,000 employees	9,080	3,072	6,006	66
Crafts	6,233	3,163	3,071	49
Consultancy professions	7,869	5,979	1,890	24
Public service	—	—	—	—
Agriculture	6,360	5,906	453	7
Health sector	6,299	6,197	102	2

*Weighted averages computed by the authors.

NOTE: All cost figures in 1990 dollars. The 1971–72 figures were deflated and then converted to U.S. dollars at a rate of $1.62/DM.

SOURCE: Sachverständigenkommission, 1974.

1980 estimates per apprentice and year

Training sector	Gross costs	Apprentice's productivity	Net costs	Net costs as percent of gross costs
All sectors*	$12,845	$5,091	$7,755	60
Industry and trade*	14,654	5,272	9,381	64
>=1,000 employees	—	—	—	—
< 1,000 employees	—	—	—	—
Crafts	10,939	4,947	5,991	55
Consultancy professions	13,199	4,700	8,499	64
Public service	17,855	2,814	15,041	84
Agriculture	10,420	7,673	2,746	26
Health sector	—	—	—	—

NOTE: All cost figures in 1990 dollars. The 1980 figures were deflated and then converted to U.S. dollars at a rate of $1.62/DM.

SOURCE: Noll et al., 1983, tables 1 and 2.

Table 2.—Apprentices by size of training and employing firm (leavers only)

	Employing firm: Number of employees							
Training firm: Number of employees	Total	1–4	5–9	10–49	50–99	100–499	500–999	1,000+
Total	n=	*15.3*	*12.2*	*25.1*	*12.1*	*18.7*	*5.5*	*11.2*
	10,624	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1–4	*100.0*	*27.3*	*13.3*	*21.6*	*10.3*	*15.0*	*4.4*	*8.1*
	16.7	29.9	18.2	14.4	14.3	13.4	13.3	12.1
5–9	*100.0*	*17.4*	*18.1*	*25.2*	*11.1*	*14.3*	*5.5*	*8.5*
	24.0	27.4	35.5	24.2	22.1	18.5	23.9	18.1
10–49	*100.0*	*11.7*	*11.3*	*33.6*	*12.2*	*18.3*	*3.9*	*9.0*
	28.5	21.9	26.4	38.2	28.9	27.9	20.3	22.7
50–99	*100.0*	*12.5*	*7.5*	*24.0*	*18.6*	*22.8*	*6.1*	*8.5*
	9.5	7.8	5.8	9.1	14.7	11.6	10.7	7.2
100–499	*100.0*	*9.3*	*8.6*	*17.9*	*13.5*	*28.4*	*7.0*	*15.2*
	12.2	7.5	8.6	8.7	13.7	18.6	15.7	16.6
500–999	*100.0*	*9.1*	*7.9*	*20.8*	*7.9*	*22.0*	*11.4*	*20.8*
	3.1	1.8	2.0	2.5	2.0	3.6	6.4	5.7
1,000+	*100.0*	*9.7*	*6.8*	*12.4*	*8.9*	*19.6*	*8.9*	*33.5*
	5.9	3.8	3.3	2.9	4.4	6.2	9.7	17.7

NOTE: Row proportion in italics. Column proportion in regular typeface. Only apprentices between age 25 and 65 are included in the tabulation.

SOURCE: Author's tabulations from Qualifikation und Berufsverlauf, 1985–86.

Table 3.—Apprentices by sector of training and employing firm (leavers only)

	Sector of employing firm					
Sector of training firm	Total	Industry	Crafts	Trade	Public adm.	Other
Total	n=	*25.9*	*18.4*	*17.8*	*19.6*	*18.2*
	10,624	100.0	100.0	100.0	100.0	100.0
Industry	*100.0*	*50.9*	*7.3*	*9.9*	*19.3*	*12.6*
	22.0	43.2	8.7	12.3	21.7	15.2
Craft	*100.0*	*24.5*	*36.8*	*9.9*	*17.5*	*11.4*
	40.5	38.3	80.9	22.4	36.1	25.3
Trade	*100.0*	*13.1*	*5.7*	*49.9*	*15.9*	*15.3*
	20.3	10.3	6.3	56.8	16.4	17.1
Public adm.	*100.0*	*12.1*	*4.2*	*6.7*	*63.0*	*14.0*
	4.3	2.0	1.0	1.6	13.9	3.3
Other	*100.0*	*12.6*	*4.5*	*9.5*	*18.1*	*55.3*
	12.9	6.2	3.1	6.9	11.9	39.1

NOTE: Row proportion in italics. Column proportion in regular typeface. Only apprentices between 25 and 65 are included in the tabulation.

SOURCE: Author's tabulations from Qualifikation und Berufsverlauf, 1985–86.

Table 4.—Log monthly earnings differentials for male skilled workers by length of time with training firm

	Sector					
Time of departure from training firm	Total	Industry	Crafts	Trade	Public service	Other
Immediately	.080 (.013)	.069 (.023)	.062 (.020)	.077 (.051)	.046 (.041)	.117 (.044)
Within 1 year	.111 (.014)	.179 (.025)	.063 (.022)	.039 (.055)	.148 (.050)	.162 (.057)
1–2 years	.056 (.015)	.080 (.026)	.036 (.023)	.048 (.058)	.134 (.053)	-.016 (.061)
2–5 years	.030 (.015)	.027 (.026)	.017 (.022)	-.000 (.060)	.101 (.043)	.053 (.060)
5+ years	.031 (.015)	-.003 (.026)	.030 (.023)	.008 (.060)	.129 (.043)	.054 (.060)
N	8,488	2,302	3,711	829	700	946

NOTE: All differentials are log monthly earnings differentials relative to workers who have remained with the firm where they were trained. The differentials were estimated in a linear model also conditioning upon firm size of training firm, a fixed effect for the field of apprenticeship, master certification, quartic in experience.

SOURCE: Author's calculations from Qualifikation und Berufsverlaug, 1985–86.

Table 5.—Proportion of apprentices reporting themselves in "Top of Their Class" in mathematics

	Sector						
Size of training firm	Total	Industry	Crafts	Trade	Public service	Other	*Marginal*
Total	.132	.152	.106	.143	.199	.137	
	18,548	4,393	7,290	2,989	955	2,921	
≤4	.110	.150	.102	.133	—	.106	—
	2,972	140	1,681	487		648	
5–9	.107	.111	.096	.123	—	.115	—
	4,016	225	2,329	813		598	
10–49	.136	.122	.111	.147	.219	.186	.019
	4,806	722	2,207	968	215	694	(.006)
50–99	.136	.125	.131	.132	.191	.138	.009
	1,579	495	429	288	157	210	(.010)
100–499	.154	.152	.113	.190	.193	.149	.026
	2,526	1,195	425	310	233	363	(.009)
500–999	.160	.181	.133	.114	.156	.121	.033
	830	480	75	61	90	124	(.013)
1,000+	.172	.180	.125	.242	.212	.123	.039
	1,819	1,136	144	62	193	284	(.010)
Marginal		.025	—	.042	.071	.022	
		(.007)		(.008)	(.012)	(.008)	

NOTE: Sample sizes are reported below the sample proportions. These figures do not include guest workers. The marginal row reports the differences in the proportion of apprentices reporting having been in the top of their class in math relative to those in the craft sector, conditioning upon firm size dummies, age and age squared, type of middle school, and sex. The marginal column reports similar differences by firm size including sector dummies. Standard errors in parentheses.

SOURCE: Author's tabulations from Qualifikation und Berufsverlauf, 1979.

Table 6.— Proportion responding that apprenticeship training was useful in current job by sector and length of time with training firm

	Sector					
Time of departure from training firm	Total	Industry	Crafts	Trade	Public service	Other
Immediately	.444	.523	.469	.429	.523	.332
Within 1 year	.416	.478	.457	.441	.397	.279
1–2 years	.442	.514	.449	.514	.596	.382
2–5 years	.484	.508	.537	.498	.464	.479
5+ years	.482	.552	.498	.676	.560	.238
Never left	.735	.779	.815	.786	.751	.591
N	9,713	2,612	4,238	974	771	1,120

NOTE: The question read "How much of the knowledge and capabilities that you acquired during your apprenticeship are you able to utilize in your current job? . . . Very much, quite a lot, some, a little, very little or nothing." Respondents were coded with 1 if the response was "very much" or "quite a lot." These estimates have been adjusted for years of experience, field of apprenticeship, and size of training firm.

SOURCE: Author's tabulations from Qualifikation und Berufsverlauf, 1985–86.

Notes

1. For instance, see the Commission on the Skills of the American Workforce (1990), and Kinzer, *New York Times*, June 2, 1993.
2. Soskice (1993).
3. For instance, see Heckman (1993).
4. Becker (1964).
5. Heckman (1993).
6. See the Edding Commission (1972) and Noll *et al.* (1983). A third attempt is currently under way at the Federal Institute for Vocational Training (BiBB), but no results have been published so far.
7. Both have been converted to 1990 U.S. dollars by first accounting for inflation with the German consumer price index through 1990 and then applying the average exchange rate of the respective year.
8. See Soskice (1993).
9. The source for these figures is the Statisches Bundesamt, *Bildung and Kultur* Fachserie 11, Reihe 3, Berufliche Bildung, 1986, 11.
10. Soskice (1993).
11. All these calculations were made using an interest rate of .06.
12. These are cross-sectional estimates, not panel data.
13. For each sector (subscripted by j), we estimated the following equation:
    ln W _{ij} = _ _kj~+~__{1j} Leav_ij~+~__{1j} School_ij~+~
    __{2j} Exp_ij ~+~
    __{3j} Exp_ij^2 ~+~
    __{4j} Exp_ij^3 ~+~
    __{5j} Firm'Size_ij~+~__ij
    where k indexes the field of the apprenticeship. We included dummies for 325 fields of apprenticeship. We also used 7 different dummies for training firm size and 5 dummies for those leaving at different points in their careers.
14. Soskice (1993) reports data from a survey of employers regarding apprenticeship training programs. However, response rates were quite low in that survey. Since the survey was explicitly focused upon training issues, one might have expected training firms to be more likely to respond.
15. These results are based upon an innovation survey commissioned by the Federal Ministry of Research and Technology and administered by the Zentrum fur Europaische Wirtschaftsforschung.
16. See Abraham and Houseman (1993a) for a more detailed description.
17. Abraham and Houseman (1993) quote Hemmer (1988), who used a sample of 145 such compensation plans.
18. Abraham and Houseman (1993).
19. Under the Lazear story, wage profiles would be expected to be even steeper in Germany if firms are deferring payments to protect firm-specific investments.
20. These figures were calculated using non-self-employed males, age 21–60. The U.S. figures represent reported weekly earnings in the outgoing rotation files from the *Current Population Survey*. The German figures were calculated using monthly income divided by 4. To convert them into 1990 dollars we first used the German CPI between 1986 and 1990 and then the exchange rate of 1.64.
21. The U.S. figures were calculated using the January, 1987 *Current Population Survey*.
22. Topel and Ward (1992).
23. The data for the United States are drawn from the outgoing rotation groups of the CPS in 1986. Self-employed workers have been excluded. The data from Germany are categorical reports of

monthly earnings. Because the underlying data are categorical, the observed c.d.f. is not smooth as reported in figure 4.

24. Jovanovic (1979).

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4. School-to-Work Opportunities: Issues in State and Local Governance

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Introduction

The proposed School-to-Work Opportunities Act of 1993 provides a national framework for the use of federal funds as seed money for states and local communities to develop comprehensive, statewide school-to-work systems. These systems will help our youth acquire the knowledge, skills, and labor market information they need to make a smooth and effective transition from high school to career-oriented employment or to further education as well as to respond to changes in local labor markets and economies. Specifically, the proposed legislation calls for programs that combine school-based and work-based learning, with employers participating as full partners. In developing their plans, states are encouraged to build on promising existing programs such as tech-prep education, career academies, school-to-apprenticeship programs, cooperative education, youth apprenticeship, and business-education compacts.

Developing school-to-work programs will not be easy. The states will have to rely heavily on the existing state and local education infrastructure to deliver the school-based component, and it is not clear this infrastructure is adequate for these new programs. In addition, the states will have to find ways to incorporate the participation of business representatives into that infrastructure to provide the work-based component, and this may be difficult.

Background

The Need for a More Effective School-to-Work Transition

The education reform efforts of the 1980s stressed higher academic requirements for all students; high school graduation requirements were raised, and the curriculum was made more academically rigorous. But these reforms have not ensured the three-quarters of the students who enter the workforce without a baccalaureate degree are ready to work when they finish high school.*

Nor has extensive vocational education helped enough, either. Of all 1987 public high school graduates in the United States, 79 percent completed at least one course in general labor market preparation and 89 percent completed at least one course in specific labor market preparation. About one-third took four or more 1-year courses devoted to specific labor market preparation.**

But employers still complain high school graduates lack the written and oral communications, mathematical, and general job skills they need to succeed in the workplace. This lack affects the national economy as well as individuals. In a widely publicized report, *America's Choice: High Skills*

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*In 1991, 85 percent of all adults 25 to 29 years had completed 4 or more years of high school, and 23 percent had completed 4 or more years of college. U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1993* (Washington, DC: 1993), 17.

**The percentage who took four or more 1-year courses was much higher for students whose high school grades were mostly Cs (39 percent) or below C (42 percent) than for students with mostly As (13 percent) or Bs (29 percent). See U.S. Department of Education, National Center for Education Statistics, *Vocational Education in the United States: 1969–1990* (Washington, DC: 1992), 9, 17.

or Low Wages, the National Center for Education and the Economy argued in 1990 that the United States must develop better skills in its high school students or it will continue to lose ground to its international competitors.[1] The clear challenge is to make school-to-work programs more effective. And now the United States is the only industrialized nation without a comprehensive system other than postsecondary education for the school-to-work transition.

Key Elements of Effective School-to-Work Transition Programs

In response to calls for a more effective transition between school and work, recent discussions about restructuring high school education have focused on the need to improve the quality of employment-related training. As government agencies and others studying the problem have considered the components of school-to-work transition over the past several years, a consensus has emerged that an effective approach must incorporate the following elements:

Greater integration of academic and vocational curricula. Schools should add more academic content to vocational courses and teach traditional academic subjects like reading, mathematics, and science with a more applied focus. This type of curriculum reform is considered appropriate for all students, including the college bound.

Structured links to postsecondary education. Programs must build strong bridges from high school to postsecondary opportunities and provide the possibility of eventual transfer to a 4-year institution as well as to a 2-year community or technical college.

Structured work experience. A significant amount of learning should take place on the job, and this learning should be integrated with classroom instruction. The successful completion of a school-to-work transition program should result in the award of academic and occupational credentials that are widely recognized and transportable. This will enable potential employers to know what skills to expect from someone who has successfully completed a program.

Broad involvement in the governance of school-to-work transition programs. Employers, workers, postsecondary institutions, community groups, and government agencies should be involved in the design, implementation, and monitoring of programs and in the evaluation of outcomes.

Existing Programs That Link School and Work

The idea of linking school and work is not new. Vocational education and cooperative programs have existed many years, as have youth apprenticeships. Tech-prep programs, career academies, and enhanced youth apprenticeship programs are recent innovations that have received much attention lately. This section provides a brief description of existing school-to-work transition programs as they are generally conceived, pointing out the ways in which they resemble and fall short of the model outlined above. There is wide variation within each broad type, and it would probably be possible to find local examples of programs within each type that contained all of the elements of the desired model.

Cooperative Education (Co-op). Cooperative education is the most common, most established form of school-to-work program. It normally involves students spending part of their day in high school and the other part at a paid job for which they also earn credit toward high school graduation. There is not necessarily any integration of classroom activity and work experience, and students take traditional academic and vocational courses. Although these programs provide students with work experience, they do not provide specific credentials recognized by employers, nor do they have established training standards. These programs normally last 1 year or less. Co-op students have tended to come from the lower socioeconomic groups and have lower academic achievement.

Tech Prep. The distinguishing feature of tech-prep programs is how they link the last 2 years of high school with community college programs in specific occupational areas. The secondary curriculum has a strong applied-academics focus and leads directly into a community college program and eventually an associate's degree in a technical field. Work experience is sometimes, but not always, included. Employers participate in developing and designing the program, and many have worked on developing competencies. In 1991, the American Technical Education Association established minimum standards for tech-prep programs.[2]

Career Academies. Career academies are organized as "schools within schools" in comprehensive high schools. Each academy has a particular occupational or industrial theme, such as health or computer technology, which serves as a focus for a highly structured program of academic and vocational courses. Students enrolled in the academy take many of their courses together, and their academic courses have an applied emphasis. Local employers serve as advisers to the academy and as mentors to the students, and they provide jobs and internships for participants. Students may be enrolled in career academies for 2 to 4 years. Most academies have targeted students who have not done well in traditional academic environments, but some of the best ones also attract 4-year college-bound students. Recently, career academies have attracted much attention and are considered to be a promising model.

Youth Apprenticeship. In youth apprenticeship programs, school and workplace learning are integrated. Employers provide paid employment and on-the-job training that lead to widely recognized credentials. This is the only school-to-work program that leads to widely accepted credentials. The goal of youth apprenticeships is to provide opportunities for students to enter well-paying careers with vertical and horizontal mobility. Employers are participants in governing the programs. Some recent models also prepare students for postsecondary education (which makes them more like tech-prep programs), but traditionally they have not provided preparation. Apprenticeships have traditionally been offered in building and metal trades and licensed service occupations.

School-Based Enterprise. Students create and operate small businesses such as restaurants, retail stores, and child-care programs. These businesses provide students with an opportunity to learn all aspects of an industry. School-based enterprises offer an attractive alternative to other types of school-to-work programs when local economic conditions make it difficult to place students. School-based enterprises contain an academic component as well.

Some programs that link schools and work have been very successful, but most do not incorporate all the key elements of school-to-work transition systems as provided for in the proposed legislation. In a recent review of school-to-work transition programs in the United States, policy analysts Thomas Bailey and Donna Merritt concluded the United States is a long way from developing a large-scale system in which a significant part of learning takes place on the job.[3] Efforts to integrate academic and vocational education are still limited. Where they have occurred, they have typically been restricted to vocational education courses (that is, vocational courses have been upgraded to include more rigorous academic training, but occupational emphases have not been added to traditional academic or college-prep courses). Most of these programs do not have the level of employer involvement required to make the workplace an integral part of the education system. Also, credentialing has been ad hoc, with the value depending on the reputation of the conferring institution. Some state and local efforts to develop competency standards are under way, but nationwide little progress has been made in developing methods to standardize certification. Bailey and Merritt find grounds for optimism about youth apprenticeship's potential to serve a wide range of students, noting many programs have expanded their enrollments beyond at-risk youth and traditional vocational education students. They caution, however, that programs serving a wide range of students tend to become internally differentiated and that students preparing for college have been only tenuously involved. Furthermore, when programs do attempt to reach out to college-bound students, the less academically oriented tend to be excluded.

Federal Initiatives

School-to-Work Opportunities Act of 1993

The proposed School-to-Work Opportunities Act of 1993 seeks to increase the number of school-to-work opportunities and to close the gap between existing programs that link school to work and the emerging vision for school-to-work transition programs. It proposes to accomplish this by establishing a national framework for developing comprehensive statewide school-to-work systems. These systems would involve both education institutions and industry, with employers as full partners. The Act, to be administered jointly by the U.S. Departments of Education and Labor, would provide federal funds to states and local communities as seed money to develop a school-to-work system. Initial development funds may be awarded under the Job Training Partnership Act (JTPA) and the Carl D. Perkins Vocational and Applied Technology Education Act.

The proposed school-to-work legislation does not recommend specific models for school-to-work programs, leaving states and communities to decide based on local need. It does, however, specify school-to-work programs funded under the Act must include a work-based learning component, a school-based learning component, and connecting activities. The work-based learning component must include job training, paid work experience, workplace mentoring, instruction in general workplace competencies, and broad instruction in all aspects of the industry students are preparing to enter. The school-based learning component is required to include career exploration and counseling, selection of a career major, a program of study designed to meet challenging academic standards and fulfill the requirements necessary to earn a skill certificate, and regular student evaluations. The connecting activities include matching students with work opportunities; serving as a liaison for employers, schools, teachers, parents, and students; providing technical assistance to employers and others; providing postprogram assistance to students; evaluating outcomes; and linking youth development activities under the School-to-Work Opportunities program with employer strategies for upgrading the skills of their workers.

The proposed School-to-Work Opportunities Act provides, as a first step, grants for states to plan and develop statewide systems. States with comprehensive plans in place may apply for implementation grants. They will be expected to use their grants to start implementing the system in place, which will involve identifying an appropriate structure to administer the School-to-Work Opportunities system; establishing broad-based partnerships to design, develop, and administer the programs; developing a marketing plan; promoting business involvement; providing guidance to local school-to-work transition activities; developing a process for issuing skill certificates; and designing curricula. Other activities might involve initiating pilot programs, developing a system for labor-market analysis and strategic planning; analyzing post-high school employment experiences; and preparing implementation plans. In developing their plans, states are encouraged to build upon promising existing programs like tech-prep education, career academies, school-to-apprenticeship programs, cooperative education, youth apprenticeship, and business-education compacts.

The emphasis in these plans is on state systems. Although the original plan for the program was to make grants directly available to individual communities that were ready to carry out local projects, the recently proposed regulations published in October limit awards of implementation grants to statewide systems.[4]

Federal Policy Goals and Instruments

The major goals of the proposed School-to-Work Opportunities Act are to

- Offer young people access to an education and training program that prepares them for a first job in a high-skill, high-wage career and for further education; and

- Transform workplaces into active learning sites.

To achieve its goals, the federal government has at its disposal the following four types of policy instruments:

- *Mandates*—rules governing actions, intended to produce compliance.

- *Inducements*—money in return for certain actions.

- *Capacity building*—money for investment in material, intellectual, or human resources with the expectation of longer term effects than inducements.

- *System changing*—authority to alter the system for delivering goods or services. System-changing policies alter the existing division of responsibilities among institutions for providing goods or services. More than one instrument can be used to further any given policy.[5]

Through the proposed School-to-Work Opportunities Act, the federal government is proposing to provide an inducement to states to develop and implement school-to-work transition programs and to provide long-term capacity building at the local level. The amount of funds being considered is small so far. For FY 1994, The House and Senate Appropriations Committees have agreed on $100 million for the School-to-Work Opportunities program, to be split evenly between the U.S. Department of Education and the U.S. Department of Labor. These funds will be used primarily for state-level planning. This $100 million is very small compared with the $1.2 billion appropriated for activities authorized by the Perkins Act and the $5 billion appropriated for the Job Training Partnership Act. Thus, at this point, the mandates, inducements, and capacity building attached to the vocational education and employment training the federal government currently funds could potentially have a significant impact on how school-to-work transition is carried out.

In a study for the National Center for Research in Vocational Education published in 1991, Lorraine M. McDonnell and W. Norton Grubb point out that federal policies in vocational education and in JTPA employment training programs are based on inducements: In both cases, the federal government provides funds to states expecting they will be used to deliver services to specified groups. But because the federal government has only limited authority over states, the inducements are supplemented with mandates that set funding conditions and specify target populations, services, and outcome standards.

There are important differences in how this works in vocational education and JTPA programs, however. In the case of secondary and postsecondary vocational education, federal funds account for a small part of total spending so the federal government only moderately influences on the overall targeting of vocational education funds and influences the providers, services, or outcomes relatively little. State and local decisions determine how these funds are targeted. However, as the sole funder of JTPA programs, the federal government has considerably more influence. It defines the eligible recipients and performance standards and leaves it to states and local jurisdictions to determine what services are provided and who delivers them.[6]

Because the federal government will have to rely so heavily on the existing state and local education and employment training infrastructure to achieve the policy goals of its school-to-work transition initiative, it is crucial to understand how education and employment training services are currently being delivered and who controls which aspects of them. The next section looks at the governance system of education and employment training programs, which constitutes the framework within which school-to-work transition programs must be carried out.

Governance of Vocational Education and Employment Training Programs

The National Center for Research in Vocational Education has conducted an extensive study of the education and job training system and the funding and regulatory mechanisms that drive it. Included were secondary and postsecondary vocational education, JTPA programs, state-funded job training programs linked to economic development strategies, and welfare-to-work programs. For this study, the center collected and analyzed data from all 50 states on their work-related education and training policies and conducted case studies of education and training institutions in eight local communities.[7] This section summarizes the center's findings on the federal, state, and local organization of vocational education and JTPA, and then discusses the important implications of this structure for the implementation of the School-to-Work Opportunities Act.

Federal Role

Vocational Education. Federal funding of secondary vocational education dates back to 1917, but until 30 years ago, the amount of federal involvement was small and had little effect on local programs. Vocational education funding and policy were for the most part determined locally. With the passage of the Vocational Education Act of 1963, the federal government increased funding for vocational education and began a serious attempt to use these funds to further federal policy goals. The 1963 Act and its 1968 amendments targeted aid more precisely and provided for greater federal influence on state policy and local programs. Programs were required to increase enrollments of individuals with special needs, defined at the time as the unemployed and minorities. Amendments passed in 1976 added new purposes, including reducing sex-stereotyping, helping students with limited English proficiency, and improving access for the handicapped. The Carl Perkins Act of 1984 singled out individuals who were disadvantaged, handicapped, entering occupations that are not traditional for their sex, adults in need of training or retraining, single parents, homemakers, people limited in their English proficiency, and people who are incarcerated. It also targeted funds for promoting sex equity and general program improvement. However, the National Assessment of Vocational Education, conducted in the late 1980s, concluded that the Carl Perkins Act was a weak instrument for achieving its goals at least partially because little had been done in the regulatory or implementation processes to convert the goals to effective guidelines for states.[8] For example, although school districts with higher poverty rates were more likely than other districts to receive Perkins funds set aside for the disadvantaged, within local districts there did not appear to be systematic methods for distributing funds based on the characteristics of students or programs.[9]

In response to the findings of the national assessment, the 1990 reauthorization of the Perkins Act, which continued the emphasis on who should be served, gave the states less discretion in distributing federal funds to local school districts and area vocational schools. It required the states to use a formula weighted by the number of disadvantaged and handicapped students. And within districts, the act required funds to go first to schools with the highest concentrations of at-risk students.

Moreover, the 1990 reauthorization went beyond previous authorizations by extending its provisions to the nature of services to be provided. In response to concern that many vocational students lacked basic academic skills and were being too narrowly trained, the reauthorization dealt specifically with what educational services should be provided with federal funds. In particular, it authorized funding for programs that integrate academic and occupational disciplines and that provide coherent sequences of courses across the secondary and postsecondary levels. It also required that the outcomes of those services be measured and reported.

Perkins funds can be used at either the secondary or postsecondary level at the state's discretion. Nationally about 40 percent of federal funds for vocational education are spent at the postsecondary level, but there is considerable variation from state to state (from 8 to 100 percent).[10]

The Job training Partnership Act. In the 1960s, employment training programs were established outside the school system, administered by the U.S. Department of Labor. These programs were consolidated in the Comprehensive Employment and Training Act of 1973 (usually known by its abbreviation, CETA), which was replaced by JTPA in 1983. In contrast to vocational education, which is largely funded by states and localities, JTPA is entirely federally funded. JTPA is targeted to specific categories of disadvantaged individuals, but funding is provided for only about 6 percent of those who are eligible. JTPA programs are shorter in duration and are more directly related to employment than most vocational education programs. They may be administered through public education institutions such as community colleges, technical institutes, and area vocational schools, but they also may be delivered by community-based organizations, unions, and private firms.

JTPA has added new organizations to the range of institutions providing job training. In addition, it has brought businesses in as participants. JTPA requiring the establishment of Private Industry Councils (PICs) to guide policy and provide program oversight. At least 51 percent of the PIC members must come from the private sector. Even though JTPA specifies who is to be served and what is to be produced, the act leaves it up to local discretion to decide who will provide the services and what the service mix should be.

State Role

Secondary Vocational Education. States hold much more direct authority than the federal government over vocational education because they pay the largest portion of total education costs and because they have constitutional authority over public education. State governments influence local policy by the way they distribute funds and how they choose to exert their regulatory authority.[*]

In most states, a board of education governs vocational education, although a few states have specialized vocational education boards. The board usually has broad responsibilities, including developing policy, planning, establishing program standards, reviewing and approving the program, certifying and overseeing teachers, and evaluating. Almost all states administer secondary vocational education through an office or division of the state education agency.

Although all states have similar authority over vocational education, actual policies vary considerably from state to state, in part because of differences in demographics, labor market needs, and resource availability, but also because of differences in the historical relationship between the state government and local districts. Some states have long-standing traditions of not intervening in local affairs and do little to regulate vocational education beyond enforcing the Perkins requirements and perhaps providing some technical assistance to help districts meet those requirements. Others are much more involved in monitoring the specifics of local programs.

States usually allocate funds for vocational education through a school-finance formula that leaves it up to local districts to decide how much to spend on vocational as opposed to general education. The amount of aid a district receives is usually based on the number of pupils or instructional units. Sometimes funds are allocated on a weighted student basis to reflect the differential costs associated with serving students in different programs or with diverse needs. Some states attach restrictions to how vocational education funds are used while others do not. Although most vocational education is still offered in comprehensive high schools, nearly all states now fund other types of institutions as well, such as vocational high schools and area vocational–technical centers.

The *program approval process* is a primary way states influence vocational education. Most states have a process to validate need, ensure standards are met, and reduce the likelihood the new program will duplicate existing ones. States vary in the emphasis they place on particular aspects of the review process, but typically they require the local district to demonstrate a labor market demand;

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[*] For state-by-state descriptions of state-level organization and practices, see McDonnell and Zellman, *Education and Training for Work in the Fifty States: A Compendium of State Policies*, 30–38.

provide evidence they have the necessary teachers, facilities, and equipment; and provide information on the program content, number of instructional hours, and course sequencing. Sometimes vocational education advisory councils (at the state, district, or school level) advise them on curriculum content.

The program approval process is usually an interactive one. When a district wants to offer a new program, it will consult informally with the state at the outset. Later on, state staff will work with local staff to modify the request as necessary to obtain approval. Most proposed programs are eventually approved. States also have the authority to terminate outdated or ineffective programs but normally try to work with schools or districts to improve them instead.

Teacher certification is another way states regulate secondary vocational education. In most states, the certification process is identical for vocational and general teachers. In some states, vocational teachers can substitute relevant work experience for education. Many states have been focusing on teacher qualifications rather than curriculum prescriptions as a way of improving the quality of teaching, and this applies to general and vocational teachers.

States expend considerable effort to coordinate the different federal- and state-funded education and employment training programs. Many states have coordinating bodies with members from a variety of state agencies—the division of vocational education, the department of labor or employment, JTPA, the department of rehabilitative services, and the department of social services. Some states include representatives of PICs or other private industry groups. These boards typically deal with interagency agreements and the targeting of state funds and services, but often have no authority to do more than talk.

Postsecondary Vocational Education. While states usually govern secondary vocational education through a state board of education, a variety of types of boards oversee postsecondary vocational education. A state might use the same state board of education that governs secondary vocational education, a community college board, a board of higher education, a higher education commission, or a vocational and technical education board. Some states have two boards sharing responsibility, dividing authority by program type or by function. Responsibility for administration also varies and may be lodged with the state department of education, a department of higher education, a community college chancellor's office, a department of technical and adult education, or some similar department.

States typically exert less control over postsecondary institutions that deliver vocational education than they do over secondary institutions, whose direction is usually left to local governing boards. States do have some control over postsecondary vocational education, however, primarily by deciding which types of institutions can provide vocational education and through funding mechanisms. But program content generally is left up to the institution. The amount of funding that goes to secondary versus postsecondary institutions varies widely from state to state.

To fund postsecondary vocational education some states use a formula based directly on enrollment, but most base their funding on program costs (faculty salaries, equipment, and enrollment) or make direct budgetary appropriations for institutions. Few states place any restrictions on the use of state funds. Federal funds are, of course, restricted by the Perkins Act, but the federal contribution to postsecondary education is typically less than 10 percent.

JTPA. The JTPA legislation allows states to shape local programs. Most states simply act as conduits for federal funds and do the required administrative functions. Some, however, use JTPA policy decisions as a way to further state goals related to employment training, economic development, or welfare reform. Decisions about services and providers are left to the local Service Delivery Areas, and states collect very little data as to how the Service Delivery Areas are organized.

Local Organization of Vocational Education and Employment Training

Secondary Education. Almost all comprehensive high schools offer some vocational education. However, the offerings are typically limited to typing and other business-oriented classes, home economics, agriculture (in rural schools), and a few courses in industrial arts or technology. Coherent sequences of occupationally specific courses in a variety of areas are rare. Instead, many students are usually found taking a few unrelated courses. School districts that have wanted to keep vocational education in their comprehensive high schools have tended to concentrate their resources in a limited number of schools or programs.

The next most common delivery site for secondary vocational education is the *area vocational center*, which serves a larger geographic area (often encompassing many school districts) and serves adults as well as high school students. Courses in these centers tend to be sequenced and indepth and may lead to state certification. In most states, students enrolled in area vocational–technical centers also take general education courses, either on-site or by splitting their time between the vocational–technical center and the high school in which they are enrolled. Students choose to attend these centers specifically to obtain occupational training; consequently, their vocational course-taking is more intensive and focused than that typically found in a comprehensive high school.

Some states have *vocational high schools*, which have programs similar to those offered in area vocational–technical centers. Some vocational high schools have a particular occupational focus such as business or health while others offer a broader range of programs.

At the secondary level, the emphasis placed on academic education and increased graduation requirements in the 1980s has contributed to declining enrollment in secondary vocational education. As graduation requirements have increased, students have had less time for vocational courses.

Postsecondary Education. Most students who receive vocational training at the postsecondary level do so at a community college, although a few states offer postsecondary vocational education in technical institutes or colleges instead of community colleges. The majority of states offer postsecondary programs in other types of institutions as well, including regional vocational–technical institutions, occupational centers, and 4-year colleges and universities.

Community and technical colleges offer a broad range of vocational programs that lead to a certificate or an associate degree. Their programs are longer and more intensive than those offered by other types of institutions, and they are more likely to be in sophisticated and capital-intensive areas such as electronics and computer-assisted design. These colleges also have more extensive academic requirements. In most colleges, courses taken at this level are the only ones that can be used to fulfill the requirements for a bachelor's degree.

Programs in *area vocational–technical centers* tend to be shorter (6 to 14 months in duration or open-entry/open-exit), and they do not lead to degrees. However, *technical institutes*, located primarily in the South, generally offer longer, more intensive programs leading to an associate degree as well as shorter certificate programs. These institutes differ from community colleges in their relative lack of academic course offerings.

Different types of postsecondary institutions within a state may have different governance arrangements. For example, a state may exert much stricter control over curriculum and hiring at technical institutes than at community colleges, or a local school district may have jurisdiction over some programs.

Most local JTPA programs do not provide services themselves, but contract with other institutions and organizations such as community colleges, adult and area vocational schools, community-based organizations, proprietary schools, unions, and firms providing on-the-job training. JTPA and vocational education are linked in two major ways. First, they support high school students who are at risk of dropping out by providing support services and summer employment. While these programs help these youths, they are limited in size and have not had a significant impact on secondary schools. Second, many JTPA programs contract with community colleges, technical institutes, and area vocational centers to provide classroom-based skills training, which has been the more significant interaction.

Implications of the Existing Governance Structure

The federal government will have to rely on the state and local government infrastructure described above to carry out its school-to-work transition policies. This section considers the implications of that structure for successful implementation of the proposed federal initiative—what supports it, and what might cause problems.

The goals of the proposed School-to-Work Opportunities Act are consistent with important federal policy goals contained in the Carl Perkins Act. The 1990 reauthorization dealt more specifically than did earlier legislation with the educational services that should be provided with federal funds. The services specified—the integration of academic and vocational education and programs that provide coherent sequences of courses across the secondary and postsecondary levels—are closely aligned with the goals of the School-to-Work Opportunities Act.

Most states already are actively supporting articulation efforts in some way, either by mandating articulation, working to develop tech-prep models, or promoting what are called "2+2" agreements between high schools and community colleges that coordinate secondary and postsecondary curricula and standards. Where states are not actively involved in articulation, there is usually much local activity. Most states support and encourage the adoption of integrated academic and vocational curricula by providing materials and technical assistance, but do not require it. Thus, at least partially in response to the Perkins Act, states and localities are already moving in a direction consistent with federal policy goals.[11]

On another front, however, the goals are not consistent. The School-to-Work Opportunities Act is aimed at all students, whereas the Perkins Act and JTPA focus on the disadvantaged. In fact, the targeting provisions of the Carl Perkins Act and the eligibility requirements of JTPA may restrict using some funds appropriated under these programs for school-to-work transition efforts that encompass all students.

The federal school-to-work initiative is expected to be funded in the long term through existing federal, state, and local programs. It is, therefore, really an educational reform rather than a new federal program. Because of the role that states play in funding and regulating education, the success of the initiative will depend to a significant extent on the degree to which states have the authority and mechanisms needed to implement school-to-work programs as envisioned by the proposed legislation. Do they have them?

States do have control of some functions that will be required to develop and carry out a statewide system of school-to-work transition programs. For example, they can set graduation requirements and curriculum standards, approve or refuse to approve vocational education programs, and certify teachers. In addition, they are experienced at providing technical assistance to local school districts. However, there is wide diversity among the states in the extent to which they choose to exert control over local policies and practices. States that have historically exerted less control could have a more difficult time establishing a statewide school-to-work system than those who have been more actively involved in locally provided services.

Despite their control over certain important functions, there are also areas in which states lack the control needed to develop and implement school-to-work transition programs. Here are the most important ones.

States have relatively little control over resources allocation at the local level. Most states allocate funds for elementary and secondary education to local districts on a per pupil or instructional unit basis without designating what should be spent for vocational education as opposed to general education. Thus, although states set the overall level of funding for education and have the power to approve programs that are proposed, they do not typically have the authority to require local districts to offer specific programs or to organize them in a particular way. At the postsecondary level, institutions are subject to even fewer constraints than are secondary school districts. In short, the governor cannot mandate what gets spent on vocational education. Thus, much of the initiative for allocating resources to school-to-work transition programs will have to come from the local level.

Most states do not have an integrated administration of secondary and postsecondary education. The School-to-Work Opportunities Act requires secondary and postsecondary institutions to work closely to develop programs that allow students to progress smoothly from high school to a postsecondary institution. This will require a new level of cooperation since secondary and postsecondary vocational education are administered separately at the state level in most states. In the past few years, cooperation has become more common because of the growth in tech-prep programs, which require the two levels to work together, but much of the cooperation has been at the local rather than state level.

Most states do not have the authority to force employers to participate or to regulate workforce learning. The most serious governance issue is that neither states nor local districts have the authority to force employers to participate in School-to-Work Opportunities programs or to regulate workplace learning. Descriptions of model school-to-work transition programs invariably stress the importance of a broad-based governance structure that includes business. Yet participation will have to be voluntary. While there are many examples of business participation in vocational education at state and local levels, it has been much more limited in scope and level than will be expected by the School-to-Work Opportunities Act. For many years, employers have advised vocational education program staff on curriculum issues and have helped develop competencies, and some businesses have employed students; however, their participation has been on a relatively small scale. Business involvement has been greater in JTPA because of the PICs; but again, participation has been voluntary.

Many believe the greatest challenge in developing and implementing effective school-to-work transition programs will be bringing in employers and making them an integral part of the education system. The next section therefore examines expectations about business involvement and discusses some important issues related to business participation.

Role of Employers

Proposed Responsibilities for Employers

A stated purpose of the proposed School-to-Work Opportunities Act is to "transform workplaces into active learning components by making employers full partners in providing high quality, work-based learning experiences to students." In practical terms this means that under the pending legislation employers will have a much greater responsibility for training and education of young people than they currently do.

Employers are expected to play a key role in planning and developing school-to-work programs. At the "system" level, employers will be expected to help develop state plans, to participate in defining the skills needed for employment in their industry and related occupational clusters, to help develop and review curriculum, and to serve on governance boards. Not all employers involved in school-to-work programs will have to participate in all these activities, of course, but substantial employer input will be required in each case. Besides these specific responsibilities, employers will also be expected to participate in public relations activities with community groups and parents to encourage participation, provide speakers, participate in career fairs, and recruit other employers. Sometimes employers will participate as representatives of trade organizations, chambers of commerce, business and professional groups, and so on.

When employers have students in their workplaces, they will have significant responsibilities. They will have to work with schools to determine what will be taught in the workplace and how. They will have to train supervisors and mentors for participation and possibly develop supplemental materials for applied academics courses. And they will have to work with schools to identify (and remove if possible) barriers to participation, such as transportation for students, child labor laws, and workers' compensation requirements. In some cases, employers will also have to create arrangements with unions for participation and collaboration.

As their programs evolve, employers will have to work closely with school staff continually to evaluate students' experiences to ensure a high-quality program. For example, they may host visiting teachers and students, provide summer internships for teachers to learn about the industry, or provide scholarships and awards to outstanding students. Employers will also have to monitor their own hiring practices to ensure they do not discriminate, displace existing workers, or otherwise violate the terms of their agreements with school districts and labor unions.

For individual students, employers will be expected to provide paid work experience and structured learning on the job (complete with supervisors and mentors), train them in specific, agreed-upon job skills, and provide them with opportunities to learn about the industry through job shadowing and rotation throughout the company. On an ongoing basis, employers will have to monitor students' progress, maintain records, certify that students have mastered occupational skills, and communicate with parents and schools.

It is obvious from this description the School-to-Work Opportunities Act envisions a substantial investment by the employer in time, equipment, and supplies. Existing school-to-work transition programs provide considerable anecdotal evidence that this will be the case. For example, Project ProTech, an apprenticeship program in Boston involving schools, hospitals, and the PIC, was able to serve only 120 of the city's 15,000 high school students even with a $970,000 federal grant.[12] The cost per student would obviously decline as a program became established and the size increased, but substantial costs must be anticipated, at least in the initial phases.

Moreover, the personal attention required for each student may hold down employer involvement. In a recent indepth study of 16 school-to-work projects around the country with 5 to 100 students, the Manpower Demonstration Research Corporation showed few employers were willing to provide work-based learning opportunities for more than three students at a time.[13]

Issues Related to Employer Participation

The large-scale participation of employers in school-to-work transition programs raises two types of issues: how to get businesses involved; and how to control the participates' involvement to ensure the highest quality experience, given that participation will be voluntary.

Getting Business Involved. Securing employers' participation is one of the most important (if not *the* most important) challenges in developing effective school-to-work transition programs. The United States now has no mechanism to force employers to participate in school-to-work transition programs. The conditions, institutions, and structures that allow Germany and other European countries to maintain large youth apprenticeship systems do not exist here.[14]

The argument is sometimes made employers are the primary benefactors of a well-trained work force and it is therefore reasonable to expect them to assume a greater responsibility for developing high school students' skills. Why would U.S. employers want to participate in school-to-work transition programs? Given that participation has to be voluntary, there are two possible reasons: civic responsibility and significant tangible benefits for their companies.

A sense of civic responsibility has unquestionably motivated many employers to form partnerships with schools to further occupational education. There are numerous demonstration projects with significant employer involvement nationwide. Typically, these employers are recruited individually through personal contacts with an elected or school official, and they are often recruited because they have an interest in training. However, it is not very realistic to think altruism will motivate the large numbers of employers who would be needed to enable the extensive student participation the School-to-Work Opportunities Act envisions.

Thus, the U.S. Department of Labor has argued employers can expect many direct benefits from participating in school-to-work transition programs. Specifically, it claims they will be able to obtain an expanded pool of qualified applicants for openings; recruit and screen potential employees; evaluate potential employees in the work setting; develop a quick, reliable source of skilled labor; help meet contractual and legal obligations for affirmative action and equal employment; improve the quality of life and skills in the community; reduce turnover; and influence curriculum development to meet industry standards.[15] To the extent employers believe these benefits outweigh the cost of participation, they should be willing to participate. But students may well choose not to work at the business where they were trained; they may not even complete the program. So participation in school-to-work transition programs provides no guaranteed direct return to businesses, and the benefits accrued to businesses directly, as opposed to their communities and the nation as a whole, are not likely to be sufficient to induce businesses to respond with the number of job experiences required.

Other difficulties stand in the way of employer participation. For instance, there is a "catch-22" in employers' attitudes: When business is bad, employers do not have the resources and motivation to train students; but when business is good, they are too busy to train and cannot wait until the students have completed their training.[16] In a related vein, difficulties may arise when a company has taken on student apprentices but then encounters financial hardships and has to lay workers off. The School-to-Work Opportunities Act will not permit employers who participate to displace workers. What will it do with its apprentices in this case?

Economists identify three kinds of strategies the federal government can use to encourage employers to hire young people and work with them in structured school and work learning situations.[17] It can appeal to business through persuasion; it can provide technical assistance to reduce the cost of capacity building; and it can provide financial incentives to individual firms to offset training and wage costs. Richard Kazis of Jobs for the Future, a nonprofit organization involved with developing youth apprenticeship models, suggests the federal government could conduct a coordinated, Cabinet-level outreach appeal to business leaders, targeting employers with a history of involvement in partnerships with schools and experience with labor shortages, and those in positions to influence other employers. The government also could underwrite the cost of developing and disseminating training materials, expand demonstration project funding for models that specifically require employer participation, and provide grants to business consortia or associations to lower participation costs.

As for financial incentives, the proposed School-to-Work Opportunities Bill does not contain any. But business representatives do not agree whether they will be needed. Some believe they are critical, especially for small- and medium-sized companies, while others believe administrative hoops are likely to be a greater deterrent than cost.[18] Obviously, no one wants to use valuable resources to pay incentives if they will not affect an employer's decision about whether to participate.[*] Some are opposed to publicly provided incentives on the grounds that the apprentice and employer are the primary beneficiaries. The reality is that any remotely feasible financial incentive would probably not come close to covering an employer's cost of participating and therefore would not increase participation.

Clearly, states and local districts will have to devote considerable attention to recruitment strategies and focus on altruistic motives. To date, state and local officials have relied heavily on personal contacts to recruit employers. This can be effective on a small scale, but as programs increase in size and number, a more systematic approach will be necessary. States and local districts will have to be prepared to allocate significant resources to recruiting employers, working out mutually satisfactory partnership arrangements, designing the work-based learning component, and coordinating school- and work-based learning.

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[*] One financial incentive would be to reduce the cost of workplace training by permitting employers to pay reduced "training" wages or by providing direct subsidies. However, in the Youth Entitlement Demonstration program implemented in the 1970s that guaranteed jobs for high school students who stayed in school, although employers were sensitive to the size of the wage subsidy, only 18 percent were willing to participate even if the entire wage was subsidized. Apparently the effort of supervising the students outweighed the expected benefit of the additional labor. See J. Ball and C. Worfhagen, with D. Gerould and L. Solnick, *Participation of Private Businesses as Work Sponsors in the Youth Entitlement Demonstration* (NY: Manpower Demonstration Research Corporation, 1981).

In recent evaluations of school-to-Work transition programs for the U.S. Department of Labor and U.S. Department of Education, researchers from Mathematica Policy Research found employers were often willing to play a role in efforts to improve high school programs and help students acquire skills needed in the workplace, and they have made a variety of types of contributions. These contributions have required varying levels of commitment by employers and have included, for example, writing curriculum, planning and administering procedures for interviewing students and matching them with part-time job openings; providing facilities and teachers for classroom instruction; and participating in advisory and design capacities. However, the evaluators concluded, based on experience, expecting employers to assume the considerable burdens of providing paying jobs and a structured program of workplace learning on a large scale (as assumed by the School-to-Work Opportunities Act) is unrealistic. They expect employers to be interested in apprenticeships only when there is a steady and growing demand for new workers—conditions found only in selected industries, occupations, and locations.[19]

Regulating Work-Based Learning. The second major issue regarding employer involvement is how to regulate the work-based learning component to ensure a high-quality experience for students. The proposed School-to-Work Opportunities Act mandates significant work-based learning; however, so far little attention has been paid to how this experience would be designed, monitored, evaluated, and improved. Bailey argues that the work component is likely to have serious gaps and inefficiencies unless it is deliberately designed. Moreover, the interests of the firm may diverge from those of the students, in which case there will be no incentive for employers to seek the best educational strategies. But enforcing a high-quality program may backfire because threatening sanctions will only exacerbate the participation problem.

As described in a previous section of this paper, states have significant control over what local school districts do through program approval and teacher certification. What kind of control will education systems have over the workplace? Employers will have the leverage if participation is voluntary and not strongly motivated by employer interest. When schools and employers disagree about how something should be done, who will prevail? And how will districts ensure employers keep the necessary records for student certification? Many of these types of activities do not have a direct payoff for the employer, and it is easy to see how they might slip.

Progress Toward Statewide Systems

Even without the incentives to be provided by the School-to-Work Opportunities Act, some states have begun to focus on the school-to-work transition. Jobs for the Future has been working with a consortium of state-level practitioners and policymakers from 15 states (Arkansas, California, Georgia, Illinois, Indiana, Iowa, Maine, Michigan, Minnesota, Oregon, Pennsylvania, Texas, Vermont, West Virginia, and Wisconsin). Six states have received grants from the U.S. Department of Labor to help them build statewide youth apprenticeship systems (California, Iowa, Maine, Michigan, Oregon, and Wisconsin), and five states have received youth apprenticeship implementation grants from the Council of Chief State School Officers (California, Maine, Minnesota, Oregon, and West Virginia).

Although the states working with Jobs for the Future have reached broad consensus on the basic design issues for school-to-work transition efforts, diversity is already apparent in the strategies and policies being put into place. Variations are to be expected because states differ in the structure of their governments, their industrial base, and their institutions that provide secondary and postsecondary education.[20]

The question of how states organize the governance of their systems and where they place authority for developing the system is a critical one. Jobs for the Future reports states are exploring governance structures that provide for considerable employer involvement, industry-specific and statewide employer associations, schools and school districts, postsecondary institutions, organized labor, and state and local government. Many states are creating or using existing interagency bodies to coordinate state policy, and typically departments of education, labor, economic development and commerce participate.[21] It remains to be seen, of course, how effective this structure is—in most cases, these statewide systems are still in the planning stage.[22]

In September 1993, the General Accounting Office (GAO) published the results of a telephone survey of all 50 states to determine how many states have adopted the components of a comprehensive strategy that included processes for developing academic and occupational competencies; career education and development; extensive links between school systems and employers; and meaningful work experiences. GAO found while many states are beginning to work on policies to address the school-to-work transition issue, only four states have enacted statutory provisions incorporating all four components, and that even in those states, implementation has been limited. The four states are Florida, Oregon, Tennessee, and Wisconsin. The most intensive activity has been in developing academic and occupational competencies, with progress on the other three components largely in the planning stage.[23]

GAO reports only two of the four states, Oregon and Wisconsin, have established joint state-business-labor bodies to coordinate and monitor school-to-work transition efforts systematically. In Oregon, the Oregon Workforce Quality Council is responsible for setting and monitoring work force development strategies. This council, by law, has 21 members, 14 of whom are appointed by the governor. These 14 must include five representatives from business, five representatives from labor or community organizations, a legislator, a local elected official, a local education representative, and a member of the general public. The other members include the governor or a designee and the chief administrators of social services, education, job training and workforce development, economic development, unemployment insurance, and corrections.

Wisconsin has also set up a formal, state-level structure to oversee school-to-work transition efforts —the Executive Cabinet for a Quality Work Force—that consists of cabinet-level officials and high-level representatives of Wisconsin's employers and labor unions appointed by the governor. Implementation responsibility belongs to the Department of Public Instruction; the Department of Administration (including its Office of School-to-Work Transition); the Department of Vocational, Technical, and Adult Education; the University of Wisconsin system; and the Department of Industry, Labor, and Human Relations. The Office of School-to-Work Transition is responsible for coordinating implementation, with the governor or the secretary of the Department of Administration charged with resolving disputes. In January 1993, the governor created the Governor's Office of Workforce Excellence in the Department of Industry, Labor, and Human Relations to create new youth apprenticeship programs, assist in local administration, administer state grants to establish career counseling centers, and offset employers' costs for supervising and training youth apprentices.

Summary and Conclusions

Recent school-to-work initiatives undertaken by states and proposed by the federal government hold a promise for significant change in the structure and content of the high school curriculum. educational reform. The foundation for developing school-to-work opportunities exists in tech-prep programs, career academies, enhanced apprenticeship programs (those that include preparation for postsecondary education as well as work), and other programs that include workplace learning. There are many examples of successful local programs that include the integration of academic and vocational education and workplace learning. The goal is now to develop statewide systems to promote broader participation and ensure all programs contain the key components of an effective program. Some states have already started in this direction.

The proposed School-to-Work Opportunities Act will help states achieve this goal; however, implementation of school-to-work programs will take place within the existing education infrastructure with its complex interaction of federal, state, and local policies. The goals of the proposed Act are consistent with two important priorities of the Carl Perkins Act—the integration of academic and vocational education and the provision of programs that provide coherent sequences of courses across the secondary and postsecondary levels. Using Perkins funds, states and local districts are already moving in a direction consistent with federal policy goals for improving the school-to-work transition. The targeting provisions of the Perkins Act and JTPA, however, may restrict the use of these funds for all students.

States already have control of some functions that will be required to develop and carry out school-to-work opportunities. Among the most important are their authority over graduation requirements, curriculum, and program content. However, states have relatively little control over resource allocation at the local level, do not have (in most cases) coordinated administration of secondary and postsecondary education, and do not have any mechanism to force employers to participate in work-based learning.

The greatest challenges will be to bring employers into the education system as full partners and to design, carry out, monitor, and regulate the workplace learning component. There is currently no mechanism in place to force employers to participate, and there are no real financial incentives to induce them to do so. Many employers have demonstrated their interest in helping to train our youth, but the amount of time and resources needed to participate to the extent envisioned by the School-to-Work Opportunities Act suggest it is unrealistic to expect employers to hire students and provide meaningful workplace instruction on a large scale. More modest goals for employer participation in terms of the types of participation and the numbers of students who can participate in workplace learning may be a more realistic expectation.

Notes

1. National Center on Education and the Economy, *America's Choice: High Skills or Low Wages* (Rochester, NY: 1990).
2. J. McGrath, "Availability of National Minimum Standards," *American Technical Education Association Journal* 3, April-May 1991.
3. Thomas Bailey and Donna Merritt, *School-To-Work Transition and Youth Apprenticeship in the United States* (NY: Manpower Demonstration Research Corporation, 1992).
4. *Federal Register*, October 14, 1993.
5. Lorraine M. McDonnell and Richard F. Elmore. "Getting the Job Done: Alternative Policy Instruments." *Education Evaluation and Policy Analysis* 9 (2) (Summer 1987): 133–152.
6. Lorraine M. McDonnell and W. Norton Grubb, *Education and Training for Work: The Policy Instruments and the Institutions* (University of California, Berkeley: National Center for Research in Vocational Education, April 1991), 19.
7. The results were presented in three publications: Lorraine M. McDonnell and W. Norton Grubb, *Education and Training for Work: The Policy Instruments and the Institutions;* W. Norton Grubb and Lorraine M. McDonnell, *Local Systems of Vocational Education and Job Training: Diversity, Interdependence, and Effectiveness* (University of California, Berkeley: National Center for Research in Vocational Education, July 1991); and Lorraine M. McDonnell and Gail L. Zellman, *Education and Training for Work in the Fifty States: A Compendium of State Policies* (University of California, Berkeley: National Center for Research in Vocational Education, 1993).
8. John G. Wirt, Lana D. Muraskin, David A. Goodwin, and Robert H. Meyer, *Final Report Volume I: Summary of Findings and Recommendations* (Washington, DC: National Assessment of Vocational Education, U.S. Department of Education, 1989), ix.
9. Lana D. Muraskin, *The Implementation of the Carl D. Perkins Act* (Washington, DC: National Assessment of Vocational Education, U.S. Department of Education, 1989), vii.
10. John G. Wirt, Lana D. Muraskin, David A. Goodwin, and Robert H. Meyer, *Final Report Volume I, Summary of Findings and Recommendations* (Washington, DC: National Assessment of Vocational Education, U.S. Department of Education, 1989), vii.
11. McDonnell and Zellman, *Education and Training for Work in the Fifty States*, 18–21.
12. *New York Times*, November 26, 1992.
13. Testimony of Edward Pauley to Senate Employment and Productivity Subcommittee, reported in *Vocational Education Weekly* 6 (25) (October 18, 1993).
14. Mary A. Hamilton and Stephen F. Hamilton, *Toward a Youth Apprenticeship System: A Progress Report from the Youth Apprenticeship Demonstration Project in Broome County, New York* (NY: Cornell University, 1993), 2–3.
15. U.S. Department of Labor, Employment and Training Administration, Office of Work-Based Learning, *School-to-Work Connections: Formulas for Success* (Washington, DC: 1992), 23.
16. Stephen F. Hamilton, "Prospects for an American-Style Youth Apprenticeship System," *Educational Researcher* 22 (3) (April 1993): 11–16.
17. See Richard Kazis, *Improving the Transition From School to Work in the United States* (Washington, DC: American Youth Policy Forum, Competitiveness Policy Council, and Jobs for the Future, 1993), 20–21.
18. Lynn Olson, "President's School-to-Work Proposal Extends Beyond Apprenticeship Focus," *Education Week* (September 8, 1993): 35–36.
19. Alan M. Hershey and Marsha K., Silverberg, *Employer Involvement in School-to-Work Transition Programs: What Can We Really Expect*, paper presented at the Association for Public Policy and Management conference, Washington, DC, October 1993.

20. Richard Kazis and John Niles, *Youth Apprenticeship: Issues and Practice in the Development of State Systems—With Examples from Maine and Wisconsin* (Cambridge: Jobs for the Future, February 1993).
21. Richard Kazis and John Niles, *Youth Apprenticeship: Issues and Practice in the Development of State Systems-With Examples from Maine and Wisconsin.*
22. Policy Studies Associates is evaluating the activities in the states that are funded by the U.S. Department of Labor and the Council of Chief State School Officers and will include recommendations on governance.
23. General Accounting Office, *Transition from School to Work: States Are Developing New Strategies to Prepare Students for Jobs* (Washington, DC: September 1993), 8.

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5. Industry-Based Education: A New Approach for School-to-Work Transition

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Introduction

The United States does a good job, probably better than any other country in the world, preparing many students for 4-year colleges and universities. But for the three-fourths of high school students who may never finish or even attempt to earn a bachelor's degree, the pathways to good-paying, sustained employment are meandering, poorly marked, and replete with dead ends and wrong turns.[1] The School-to-Work Opportunities Act challenges states to change this state of affairs. It encourages them to fashion a new system of school-to-work transition from the hodgepodge of programs and agencies spawned by the federal and state governments over the past 70 years.

Traditionally in the United States, vocational education has shouldered responsibility for the workforce preparation of high school students, especially those not pursuing a college education. Until about 1970, vocational programs mainly provided training for entry-level positions in agriculture, business, trade, and industry. During the past 20 years, vocational education has grown substantially in 2-year community colleges and private proprietary schools, leading to a growing emphasis on health and technical occupations. However, the focus has remained pre-baccalaureate. Moreover, until the recent push for developing tech-prep programs spanning the last two years of high school and the first two years of community college, connections between secondary and postsecondary vocational education programs were loose to nonexistent. Consequently, many students enrolled in postsecondary institutions failed to pursue a coherent program of study, and relatively few of them attained 2-year degrees or certificates.*

Americans are extraordinarily ambivalent about vocational education. On the one hand, vocational education has enjoyed strong, long-standing federal support. Since the passage of the Smith-Hughes Act in 1917, policymakers have expected great things of vocational education—from assimilating immigrant youth to reducing dropout rates to creating new employment opportunities for displaced workers, women re-entering the workforce, and other students with a variety of special needs. On the other hand, many parents view vocational education with suspicion; they see it as a high school dumping ground that cuts off college opportunities and relegates their children to a future of low-paying, dead-end jobs. Many educators also view vocational education as second rate, and the agendas of national and state school-reform efforts during the 1980s generally ignored vocational education. Indeed, the widespread adoption of increased academic requirements limited students' opportunities to participate in vocational education. Some observers viewed this decline with concern and argued that vocational education could contribute much to new conceptions of secondary and postsecondary education. Most champions of education reform, however, had little interest in vocational education, and some even welcomed its decline and predicted it would soon disappear from the high school curriculum.

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*Of 1980 high school seniors enrolled in public 2-year institutions, 16.6 percent had earned an associate's degree by 1984, and 3.5 percent had earned a certificate. See E. Gareth Hoachlander, Phillip Kaufman, Karen Levesque, and James Houser, *Vocational Education in the United States: 1969–1990* (Washington, DC: National Center for Education Statistics, table 5, 111, April 1992.

The evolution of the School-to-Work Opportunities Act reflects this ambivalence. An early draft of the legislation sought to replace the existing vocational education enterprise and substitute a new, but ill-defined, system of youth apprenticeship. As the legislation evolved, its focus broadened to include cooperative education and tech-prep programs. It also adopted one of the primary goals of the 1990 Carl Perkins Vocational and Applied Technology Education Act—the integration of vocational and academic curricula. Nevertheless, many supporters of school-to-work programs continue to harbor a basic distrust of vocational education, doubting it has much to contribute to a 21st century system of workforce preparation.

Despite this ambivalence, fashioning a successful, wide-reaching system of school-to-work transition depends on finding a strategy for building on the existing vocational education enterprise. One reason is simply resources. The nation cannot afford to build a parallel system that will serve the majority of its youth. But the reasons go well beyond fiscal capacity. Appropriately conceived, vocational education can provide the building blocks for new approaches to workforce preparation that appeal to all students and significantly enhance their opportunities for future education and work. A key ingredient, as will be argued in this paper, is transforming vocational education from its traditional emphasis on occupational preparation to a focus on large industries that can provide a much broader context for imparting work-related knowledge and skills.

This paper begins by examining the principles underlying the new school-to-work initiative and the major challenges it faces. Then it briefly reviews the current status of vocational education in the United States, identifying its major strengths and weaknesses. Based on this assessment, the paper outlines the structure of a new school-to-work curriculum.* This new structure downplays preparation for specific occupations—the traditional objective of vocational education—and instead emphasizes providing students with an understanding of major industries, such as communications, finance, hospitality, and transportation. Such a curriculum would not abandon specific skill training, academic or occupational, but instead would teach these skills in a much broader context that also attends to the history, technology, organization, and systems of the work world.

School-to-Work Transition: Principles and Challenges

The School-to-Work Opportunities Act contains four principles central to fashioning an improved system of school-to-work transition. First, the legislation urges creation of a sustained, structured program of study that integrates academic and vocational instruction. The precise duration and timing of this program is intentionally vague so it can be adapted to a variety of institutional arrangements as well as to differences among students in aspirations, abilities, and achievement. A concentrated program of school-to-work preparation would probably last at least 2 years and end no sooner than the last year of high school. For many students, a longer program of 4 to 6 years would span secondary and postsecondary education. It could begin as early as the 9th or 10th grade, continue through the first 2 years of postsecondary education (probably at a community college), and even be linked to a 4-year baccalaureate degree and further graduate training.

Whatever its duration and beginning and ending points, the key feature of this system is unmistakable: It is a structured program with clearly marked paths of education and work. There is no one right way to go. Branches, detours, course reversals, and other changes are permissible, perhaps even encouraged; however, the routes from one point to another are well marked, and the knowledge and skills needed to make the journey are well described. Equally important, the pathways combine academic and vocational instruction, using work as the context for applying knowledge and skills.

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*The primary focus of this paper is on a curriculum for secondary schools. Although the framework is certainly relevant for postsecondary institutions as well, postsecondary applications will need more attention than can be devoted here.

Academic knowledge is not taught in the abstract, and vocational skills are not taught in the absence of more general theory. Rather, the two are taught in tandem to maximize understanding, retention, and transferability to a variety of problems and situations.

The second principle underlying school-to-work is the integration of classroom-based instruction with work-based learning. In some respects, school-to-work is a misnomer; school *and* work, mutually and simultaneously reinforcing one another, are the dual training grounds for workforce preparation. Clearly, what is envisioned is not simply work experience (as valuable as that may be), but rather much more careful coordination between the timing and substance of experience in the workplace and in the classroom. This feature of the school-to-work initiative helps explain its early preoccupation with youth apprenticeship, which stresses careful mixing of classroom instruction with opportunities for hands-on experience on the job. Admittedly, this is a learning strategy not widely used in the United States, but other examples in addition to youth apprenticeship or its adult apprenticeship counterpart have been in practice nationwide. Cooperative education, for example, which annually enrolls about 500,000 students, has long stressed the integration of school and work. However, co-op programs tend to be shorter, about 1 year, in contrast to the model youth apprenticeship programs that span up to 4 years. Additionally, the programs of several professional schools—most notably, medicine, dentistry, and architecture—build curriculum around integrated classroom and work experience, with the latter consisting of both real and simulated work situations for students. For that matter, the laboratory experience that is essential to most top-flight science curricula employs some of the same learning theory, although many science labs fail miserably to make clear connections to real-world applications.

The third principle of the School-to-Work Opportunities initiative is clear articulation with the full range of postsecondary opportunities. At a minimum, participation in work-based preparation in high school should not foreclose any opportunities to pursue postsecondary education. Ideally, it should enhance postsecondary opportunities and provide some well-defined alternatives to the traditional academic curriculum that has been the only avenue to the baccalaureate degree and beyond. This principle does not mean all students must or should pursue postsecondary education. It simply means one's curriculum choices in high school should not severely constrain one's opportunities later.

The fourth principle of the school-to-work legislation is it should expand educational and work opportunities for *all* students. The School-to-Work Opportunities Act began as an initiative for the noncollege bound, especially the 40 to 50 percent of high school students who never enter any form of postsecondary education or formal training. Unquestionably, this group fares least well in the labor market. However, to create a program defined primarily for those who do not go to college is to doom it from the outset. Part of the problem, of course, is the stigma such a limited program would almost certainly acquire. More practically, almost all high school students aspire to college. While more than half will not realize these aspirations, they do not decide prospectively to lower their expectations and opt for something else. Therefore, a program for the noncollege bound is simply not one that very many high school students would choose.* Ironically, the most effective strategy for better serving noncollege-bound students lies in not developing a program specifically aimed at this group.

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*One could try to force students to choose early between an academic curriculum preparing them for 4-year college and university and a vocational–technical curriculum preparing them for more immediate entry in the workforce. This practice is essentially the model used in many European countries that rely on examinations to sort students early in their education. American education reformers have recently proposed variations of this model. See, for example, Commission on Skills of the American Workforce, ***America's Choice: High Skills or Low Wages*** (Rochester, NY: National Center on Education and the Economy, 1990). Oregon is adopting and implementing changes to its secondary education system that would transform it into a two-track system. But these proposals in America come when the European practices are being increasingly challenged by parents and students wanting greater access to postsecondary education.

There are some formidable challenges to developing and implementing a system of school-to-work transition that adheres to these four principles. First, and probably foremost, there is currently no well-developed curriculum framework that would permit its use on a large scale. What are the programs of study youth would pursue? What are the respective roles and responsibilities of educational institutions and employers? How will the knowledge and skill content of these programs be determined and kept up to date? What is the appropriate mix of classroom instruction and work experience, and how will the necessary coordination be accomplished? How will responsibilities between secondary and postsecondary institutions be divided and effective articulation accomplished? Little attention has been paid to answering these questions. And these issues are not mere details. Rather, they are central to defining and implementing a large-scale system of reform.

Structurally, promoters of a new system of school-to-work transition have thus far settled on only one unifying theme: collaboration between schools and employers. As important as collaboration is to effective programs, it currently lacks much substance. Precisely what are schools and employers supposed to do together? If a young woman interested in aeronautical engineering is working as a mechanic's helper in the maintenance facility of a major airline, is it the employer's responsibility to teach her the equations used to calculate the lift and drag coefficient of different airfoils? Or does the employer merely provide opportunities to apply these calculations? For that matter, does she really need to know these calculations at all, and if she does, how important are they relative to other kinds of knowledge? Who decides? Even though today's airframe and power mechanic probably never uses these equations, would long-term design and engineering of aircraft be better served if mechanics possessed greater theoretical understanding that improved communication between them and engineers? How would better communication be assured if mechanics possessed such knowledge? Carrying out new school-to-work programs requires getting beyond generalities and down to the specifics of what students should know.

The problem is not just specificity but what degree and kind of specificity. Existing secondary and postsecondary vocational education programs, as well as apprenticeship and various employment training programs, are full of detailed knowledge and skill requirements, often with the full blessing and participation of employers. More often than not, however, the development of these requirements has been willy-nilly, with no criteria to guide specification and little sense of the long-term educational goals that need attention.

A second challenge facing the school-to-work initiative is impact. Its promoters talk disparagingly about mere programs and instead call for creating new systems and "getting to scale," by which they seem to mean doing something really large in scope. Although the School-to-Work Opportunities Act is a federal initiative, there is very little federal money to implement it—probably less than $300 million annually. Consequently, proponents of the initiative promote it as providing seed money to state and local governments that will be primarily responsible for finding the resources needed to achieve the aims of the legislation. This venture capital approach to investing federal dollars is probably the right strategy given very limited federal resources. However, it is not clear these proponents understand the magnitude of the task or that they have a well-developed strategy for leveraging federal funds.

For example, the cost of a comprehensive, 4-year program of academic and vocational study that would serve half of the nation's youth between the ages of 16 and 19 is probably at least $35 to $40 billion annually.* Fortunately, this may not represent new money because the nation already spends roughly that amount on this age group in public high schools and community colleges. Thus, the challenge is redirecting these existing resources rather than finding new dollars. Nevertheless, this is a daunting task, akin to turning the proverbial battleship proceeding under full speed. Now, the primary strategy for accomplishing this maneuver is federal support for multi-agency planning at the state level, with some additional but rather limited funding for supporting implementation of the most promising plans. Why this strategy is likely to be effective is not immediately obvious. Moreover, even if the choice of means is correct, the process would benefit from more substantive direction than the federal level has yet provided.

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*In 1992–93, there were approximately 13.2 million people in the United States, ages 16–19. Average expenditures per student in the K–12 system were about $5,300 per student. Assuming a comparable amount were also spent at the postsecondary level, the annual cost would be $35 billion (6.6 million students x $5,300). This is a rough estimate. Actual expenditures could be more, requiring new resources. In any event, available federal funds are but a small fraction of the total expenditures needed for a large-scale effort.

The third challenge is developing a functioning school-to-work program that has wide appeal. School-to-work programs cannot simply claim to be for all students. They must capture the interest of a wide range of students and avoid acquiring the stigma of a program that mainly serves low-achieving students.

To appreciate better how difficult this may be, consider that 98 percent of high school students now take at least one course in the vocational education curriculum before graduating. Moreover, almost 90 percent take at least one occupationally specific course, as do more than three-quarters of the most academically inclined who earn mostly As during their high school careers.[2] Unquestionably, lower achieving students and students from lower socioeconomic backgrounds take considerably more vocational courses in high school, but virtually all high school students take some courses. Nevertheless, vocational education continually struggles with the widespread perception that the curriculum is not only useless for college preparation but also counterproductive. Vocational education, as the popular wisdom goes, "is not for my children."

Clearly, mere participation around the edges of school-to-work by students preparing for 4-year college will not make this a program for all students. If school-to-work initiatives are to avoid second-class status in secondary and postsecondary institutions, they must fully engage a significant number of students who will pursue 4-year college programs. How best to accomplish this aim has not been carefully considered.

There is a fourth challenge: The school-to-work initiative must not just appeal to a wide range of students, it must also engage a large number of teachers, academic and vocational, who are already part of the secondary and postsecondary education enterprise. If the school-to-work initiative is to reach significant numbers of students and use dollars already allocated to public education in the near future, it must enlist the energy, knowledge, and creativity of existing faculty. Although training new faculty is important, most of those who will carry out a large-scale school-to-work program are already in the teaching force. Proclamation alone will not turn their attention to the aims and substance of school-to-work. Some well-crafted and ongoing staff development is a crucial, although so far missing, ingredient in a successful school-to-work initiative.

In summary, a successful, large-scale school-to-work initiative depends on fashioning a new curriculum that appeals to a wide range of students and teachers and contains a clear role for employers. Implementing this curriculum will require redirecting resources already devoted to secondary and postsecondary education and must rely primarily on faculty who are currently teaching. Therefore, a new curriculum needs to build upon the strengths already inherent in the present system, while simultaneously avoiding its most serious weaknesses. Consequently, before discussing the development of a curriculum framework, a brief review of the nation's primary approach to workforce preparation, vocational education, is in order.

Vocational Education: A Brief Assessment

Vocational education has existed as a distinct course of study in American education since the late 19th century when private trade schools began providing training in agriculture and business. Near the turn of the century, as public schools grew in number, vocational education began to find its way into the curriculum, and the Smith-Hughes Act of 1917 provided federal support to encourage the further development of high school programs in agriculture, business, marketing, home economics, trade, and industry. Federal vocational education policy remained virtually the same until 1963, when the Vocational Education Act was passed. This legislation significantly increased federal support for vocational education. Moreover, it encouraged the development of area vocational schools and recommended improving the quality of vocational programs for disadvantaged students. Amendments in 1968 and 1976 continued these policies and also began to provide more federal support for vocational education at the postsecondary level.

The Carl D. Perkins Vocational Education Act of 1984 marked the beginning of a major effort to focus federal policy more effectively. This legislation advanced two primary federal goals: improved access and services for students with special needs and program improvement. The law no longer allowed states to use federal funds simply to maintain existing programs, and it increased reliance on set-asides that allocated specific proportions of federal funds for students with special needs.

In 1990, the Carl D. Perkins Vocational and Applied Technology Education Act further focused and clarified federal policy. It promoted four major objectives: targeting all federal funds on secondary and postsecondary recipients with high concentrations of economically disadvantaged and disabled students; promoting the integration of academic and vocational education; encouraging the development of tech-prep programs that linked secondary and postsecondary offerings; and requiring the development of accountability systems of performance measures and standards.

Four features distinguish vocational education over the past century. First, the curriculum has operated in isolation from the rest of the secondary and postsecondary offerings. Few, if any, links have existed between academic and vocational courses nor has there been much communication between vocational and academic faculty. Academic teachers have paid little attention to the vocational interests of students, and vocational teachers have usually limited their instruction to teaching job-specific skills.

Second, vocational education has focused primarily on occupationally specific preparation for work. With the exception of vocational agriculture programs, which assumed a broader role in preparing students for living in rural communities, vocational education has tended to organize programs around narrowly bounded occupations. Thus, a student active in vocational education would not concentrate in health; rather this student would pursue a program in nursing, or more specifically, licensed vocational nursing or nursing assisting. The vocational curriculum has emphasized skills suited to a particular occupation, with little attention to more generalized knowledge, requirements in related fields, or the larger context of the industry in which students may be working. Table 1 illustrates the kind of occupational specificity that is typical of many secondary and postsecondary vocational offerings.

Table 1.—Typical vocational education program offerings (selected programs)

Accounting
Appliance repair
Audio-visual communications
Auto diesel mechanics
Automotive specialist
Building construction
Business information processing
Carpentry
Civil technology
Commercial art
Communication electronics
Computer programming
Electronics
Food production
General merchandising
General secretarial
Health assisting
Heating and air conditioning
Home health aide
Horticulture
Machine trades
Medical assisting
Microcomputer repair
Nursing assisting

Table 1.—Typical vocational education program offerings (selected programs)—Continued

Construction masonry	Plumbing
Diesel engine mechanics	Robotics technology
Drafting	Sheet metal
Electrical occupations	Welding

SOURCE: Student Assessments, National Occupational Competency Testing Institute.

Third, the occupational focus of vocational education has, by the definition of federal law, been limited to preparation for jobs that require less than a baccalaureate degree. For the first half of the century, very little vocational education existed at the postsecondary level at all. Postsecondary programs grew significantly in less-than-4-year institutions from 1960 to 1980, and these programs typically ended with the award of a 1-year certificate or a 2-year associate's degree. This limitation has contributed to the widespread perception that vocational education is inconsistent with a student preparing for or pursuing a college education, by which most people mean a baccalaureate degree.

Fourth, vocational education has been almost the exclusive responsibility of educators, with business and labor assuming a less formal role. Apprenticeship and cooperative vocational education programs are exceptions to this generalization, enrolling relatively small numbers of students.[*] Nevertheless, vocational education in the United States has been limited mainly to school-based instruction. Many vocational programs do have advisory committees that include strong business and labor representation, but these committees have little or no formal authority or responsibility. Nor are there any guaranteed transitions from school to work as a result of successfully completing a vocational education program at the secondary or the postsecondary level.

The combination of isolation from the academic curriculum and preparation limited to specific jobs requiring less than a baccalaureate degree has, probably more than any other factor, contributed to the long-standing and widespread perception that the vocational curriculum provides a second-rate education. Vocational educators have also complained the federal government's increasing concentration of federal vocational funds on special populations fuels this perception by implying that vocational education is intended for disadvantaged students.

Despite its image problem, vocational education has been widely used by both secondary and postsecondary students. Virtually all high school students take at least one course in the vocational curriculum during their high school careers. Moreover, the vocational curriculum accounts, on the average, for about 20 percent of the Carnegie units[**] high school students accumulate in 4 years of school. At the postsecondary level, vocational education is especially popular among community college students, and private proprietary schools also enroll many students.

At the secondary level, however, participation in vocational education has been declining steadily since about 1982. Between 1982 and 1987, the average number of Carnegie units taken in the high school vocational curriculum declined from 4.6 to 4.2.[3] This average declined further to 3.8 by 1992.[4] These national statistics are consistent with widespread anecdotal complaints by vocational educators that vocational education has been slowly disappearing from the high school curriculum.

Even at the postsecondary level, where many acknowledge the specific occupational preparation is more appropriate and rigorous, vocational education suffers from problems of standing. Transfer to

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[*] Of the 13 million young people ages 16–19 in 1992, only about 2,000 were participating in youth apprenticeship programs. Enrollment in secondary and postsecondary cooperative programs has been estimated at about 500,000.

[**] A Carnegie unit represents one period (about 55 minutes) per day, 5 days per week, for two semesters. Thus, a high school student taking courses in a six-period day would accumulate six Carnegie unites for the academic year.

4-year colleges is still the touted mission of community colleges, despite the fact that probably fewer than 15 percent of the students in these institutions ever make that passage. What transfers do occur are accomplished mainly by community college students pursuing academic associate degrees. Few of those attaining vocational associate degrees go on to 4-year institutions.

Like most stereotypes, the public perception that vocational education is below standard is part true and part false. Just as there are poor academic offerings in some of the nation's high schools, so too are there vocational programs long out of date, poorly equipped, and incompetently taught. For example, there are nursing-assistant programs where the curriculum consists mainly of teaching girls (mostly minority) how to perform sponge baths and change bedpans.* There are, however, some outstanding vocational programs. For example, in a few high schools around the country, aviation programs offer students broad-based preparation in a variety of fields from airframe and power mechanics to aeronautical engineering, and most program participants go on to 4-year colleges and universities.**

Regardless of this wide range of quality in practice, in principle vocational education embraces tenets many educators and researchers increasingly believe are central to promoting better learning. Through work, vocational education provides a context for applying, and therefore better understanding, academic knowledge and skills. Vocational education has always been more hands-on than most academic curricula. It moves from the concrete to the abstract, from the specific to the general. It can engage the imagination of many students and motivate them in ways the conventional academic curriculum cannot or at least so far has not.

Additionally, vocational faculty are a large, and mostly unappreciated, source of work-related knowledge and skill in secondary and postsecondary institutions. In America's high schools, vocational teachers represent about one-fifth of the total teaching force.[5] In community colleges, their numbers are closer to one-half of the faculty. A major problem confronting the development of an effective school-to-work curriculum is most academic faculty, as well as most administrators and support personnel (especially counselors), have limited knowledge of and experience in any industry other than education. Although the knowledge and experience of vocational faculty may not always be as current and broadly developed as one might like, ignoring this resource, especially without any clear alternative, would be a serious miscalculation.

Finally, a growing body of research shows participation in vocational education produces positive learning and labor-market outcomes if students complete a comprehensive program of academic and vocational study and secure work in a field related to their studies. Unfortunately, public education policy in the United States has neglected promoting program completion and has instead concentrated on access and process. The consequence of this neglect in vocational education is evident: Most secondary and postsecondary participants in vocational education do not complete programs, and typically fewer than half of those who complete their programs find related work.

In summary, vocational education is, in some important respects, out of date. As with much of the educational enterprise in this country, vocational education still employs a curriculum framework and pedagogy rooted in the first quarter of the 20th century. While age alone should not be grounds for change, there is clear evidence the isolation of vocational education from academics, its narrow occupational focus, and its limitation to pre-baccalaureate instruction detract from its potentially valuable contribution to workforce preparation. What, then, might an alternative approach be?

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*These are necessary skills that must be taught. They can, in fact, have a place in a high school curriculum. The issue is emphasis, related content, and context. A program limited to imparting mainly these skills severely constrains students' opportunities and grossly misjudges their abilities to learn.

**Aviation High School in New York City is perhaps the oldest and best known of these schools, but there are others. In September 1993, to kick off the introduction of the School-to-Work Opportunities Act, President Clinton visited a similar program in Georgetown, Delaware.

Toward a New School-to-Work Curriculum: Industry-Based Education

Consider two very different approaches high schools may use to prepare students for working in the construction world. The first school, adopting the traditional approach in this country, limits instruction to preparation for building trades occupations—carpentry, masonry, plumbing, electricity, and drywall. Students who are interested in these occupations (mostly boys) are separated from everyone else, and during their junior and senior years in high school, they spend two or 3 hours every day in a shop devoted to their particular trade. Because these occupations do not require a college education, it is assumed these students are not college-bound, although they may pursue some additional training in their trade at a local community college, or they may enter an apprenticeship program. Since these students are not likely to go to college, they are permitted (perhaps even encouraged) to take courses called General Math, General Science, and General English. Taking these courses virtually guarantees they will not go to college because the courses are not recognized as acceptable for admission at most 4-year colleges and universities. In effect, college is no longer an option for these students. Moreover, should any of them decide their chosen construction trade is not what they want to do, they are not likely to know much about any alternatives, let alone have the knowledge and skills to pursue them.

The second school adopts a different approach. It does not offer building trades programs but a 4-year Built Environment Program. The program is for any student interested in some aspect of the building industry—including the building trades, to be sure, but also architecture, engineering, interior design, planning, housing policy, or construction technology.[*] Participants may or may not go to a 4-year college, but this choice is not affected by their decision to enter the program. Rather, it largely will be determined by how their aspirations and abilities develop and how well they perform in their 4 years in high school. The program includes both boys and girls, although the building industry is still male dominated.

During their high school careers, the students in the Built Environment Program take the same core of academic courses—4 years of English, 4 years of history or social studies, 3 years of math, and 3 years of science. Students are also encouraged to take 2 years of foreign language. Although there is no general curriculum, students can choose courses within the core curriculum. The science requirement, for example, can be satisfied by taking chemistry, biology, physics, and principles of technology, as well as a followup course in any of these subjects if a student wants to specialize. All the core courses, however, are tailored around students' interests in the built environment. In world history, for example, they study the evolution of cities and cross-cultural approaches to housing and furnishing. Trigonometry relies heavily on problems from carpentry and engineering.

Each year, students also participate in a studio. The studio is shorter in the freshman and sophomore years, perhaps consisting of one or two sessions per week that last 2 hours. By the senior year, however, the studio may last 2 to 3 hours every day. The studios are project oriented and integrate what students learn in their core courses into actual projects. In the freshman year, for example, the studio might consist of producing a complete housing profile on a nearby urban neighborhood, developing an inventory of structures by age, size, type of construction, and demographics of residents. This might lead to a sophomore studio on housing policy and the problems of homelessness. A studio in the junior year might be devoted to planning and designing a housing project the students will build in their senior studio. This senior studio is not merely a house-building project, which is a common feature of many vocational carpentry programs. It is that and much more—a project culminating 4 years of exploring design, technology, environmental impact, public policy, finance, health, safety, and a host of other issues surrounding the role of the building industry in America.

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[*] In opting for the Built Environment Program, the student is not choosing a career. Rather, he or she is simply selecting an area around which to organize a program of study in much the same way that a college student selects a major. This provides an opportunity to connect the high school curriculum to the real world, while also helping them to develop some focused, indepth knowledge. Many students selecting the program may pursue careers in the building industry, but this is not the primary objective.

Both the core courses and the studios are team taught by academic and vocational teachers (who might now be called industry specialists). As a rule, the same teachers would follow the students through all 4 years of high school, helping to ensure students continually build on the knowledge and skills they learned previously. Core courses, incidentally, would not necessarily meet five times each week for 50 minutes at a time. In some semesters of some years, they might only meet three times a week to free up time for the studio.

In short, the alternative described here is an industry-based curriculum for preparing all kinds of students—those who plan to go to college and those who do not, boys and girls, those inclined toward either academic or more applied study, slow or fast learners—for productive, satisfying work. Its focus on industries rather than occupations provides a concrete context for students and teachers to apply knowledge and skills while also offering sufficient breadth to embrace a wide range of interests among students and faculty. Opportunities for integrating academic and vocational curricula are limited only by the imagination of teachers and students. Thus, the industry-based curriculum provides focus, which is increasingly recognized as central to good schooling but avoids encouraging narrow, premature specialization.[6]

As atypical as this alternative scenario may sound, it is not a fantasy. Some high schools already use variations or selected features of this model, and it will sound familiar to those who have spent some time in certain magnet schools, academies, or a few full-time vocational high schools such as the Chicago High School for Agricultural Science and Technology or Ringe High School in Cambridge, Massachusetts.[7] Additionally, the model is consistent with scattered efforts to begin implementing the provisions of the 1990 Perkins Act, which encourage broadening vocational education to include giving students experience and understanding in all aspects of the industry—planning, management, technology, and labor. Nevertheless, there are few working examples. Nor is there any systematic framework for replicating these examples more widely. What might such a framework look like?

Developing a more coherent framework will require attention to at least five features: an acceptable taxonomy of industries for organizing curriculum; articulation of the content of the curriculum; an understanding of how an industry-based curriculum might be delivered in high schools of different sizes and in different locations; clear functions for academic and vocational teachers; and a well-defined role for business and labor.

A Taxonomy of Industry Programs

If industry is to replace occupation as the basic building block of a school-to-work curriculum, what constitutes an industry? There may be general agreement it makes little sense to devote 4 years of high school to becoming an auto diesel mechanic; however, if one were to replace occupational specificity, what level of industry generalization would be appropriate—automotive services, the automobile industry, or even more generally, transportation?

There is no single answer to this question, but it is possible to posit some guidelines. First, we need a manageable number of industries so the resulting curricula are neither hopelessly general nor too specific. "Business," for example, is not a very useful construct, despite the fact that in the traditional vocational education lexicon it has stood for a variety of support occupations including accounting, secretarial, and clerical. At another extreme, "industrial laundering" is clearly too narrow.*

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*Lest this example seem farfetched, industrial laundering is one of the industries recently selected for the development of national industry standards.

Probably between 10 and 20 industry classifications represents a manageable number of curriculum areas.

Dividing the world of work into 10–20 categories implies, then, size is one of the criteria for determining the boundaries of an industry. One might suggest, for example, to qualify as a curriculum area, the specification of an industry must account for at least 3 percent of national employment or gross domestic product. Additionally, the industry classification should possess a rather high degree of economic coherence. What constitutes an industry ought to represent how an economic activity is organized to produce a recognizable set of products or services. Finally, an industry ought to rely on diverse use of both physical and human capital. It should involve a wide range of technologies and employ individuals with a variety of educational backgrounds and attainment levels.

With these criteria in mind, it is instructive to examine Sweden's recent efforts to reorganize the high school curriculum around large industries. Table 2 displays the 16 national programs that are now the basis of the Swedish Upper Secondary School. The Swedish programs are clearly no longer an occupational approach to organizing curriculum although several of the categories could be defined more broadly and coherently. For example, combining child care and leisure seems a bit odd, and the rationale for separating electricity from energy is not clear. Furthermore, the list of programs is hardly inclusive of all major economic activity. Several sectors—finance, insurance, communication, and government—are noticeably absent. Nevertheless, the Swedish effort is an interesting example of an actual attempt to restructure the secondary curriculum around an industry focus.

Table 2.—Swedish upper secondary school: 16 national programs

Aesthetic
Child care and leisure hotel and restaurant trades
Construction
Electricity
Energy
Foodstuffs
Handicrafts
Health care
Industry
Land and animal husbandry
Media
Natural sciences
Social sciences
Trade and administration
Transport technology

SOURCE: National Agency for Education, Stockholm, Sweden.

In the United States, several industry taxonomies have been developed to collect economic and demographic statistics—the Standard Industrial Classification (SIC), for example. These, however, were never designed with curriculum in mind. The American College Testing Corporation (ACT) uses a complicated "world-of-work map" as the underlying framework for DISCOVER, its computer-based career planning system, but the resulting categories are not easy to relate to recognizable industries.

For simplicity, coverage, and ease of understanding, perhaps the most elegant taxonomy is one developed by John Gnaedinger, an engineer with a strong interest in promoting a refashioned system of career education for young people. Gnaedinger divides the U.S. economy into 16 industries that in the aggregate capture virtually every form of economic activity in the legal, paid economy. Table 3 displays his categories. Gnaedinger was mainly concerned with finding a format for providing high school students with information about a wider range of career opportunities than the mix traditionally included in vocational education; however, he also envisioned organizing the curriculum of entire schools, or schools-within-schools, around these industry classifications.

Table 3.—The Gnaedinger taxonomy: 16 industries

Arts, culture, and religion	Hospitality
Built environment	Insurance
Communication	Manufacturing
Education	Natural resources
Energy	Personal and business services
Finance	Retailing and wholesaling
Government	Transportation

SOURCE: STS Consultants. Ltd.

The Gnaedinger taxonomy is a fine start to discussing the organization of an indutry-based curriculum. What, then, are the substantive areas that might make up the curriculum?

Major Aspects of Industry-Based Curriculum

One of the newest and potentially most important features of the 1990 Carl Perkins Act was its language directing states to assess the capacity of vocational education to provide students with "strong experience in and understanding of all aspects of the industry the students are preparing to enter."[8] It is, of course, impossible to teach anyone all aspects of anything, and in reading the law, it is clear what its framers had in mind—attention to such topics as planning, management, finances, technical and production skills, underlying principles of technology, labor and community issues, and health, safety, and environmental issues. Whether this is the right list can be debated (a somewhat modified list is suggested below), but clearly the lawmakers sought to broaden considerably the focus of traditional vocational education.

The power of the "all aspects" notion lies not in its ability to outline alternative knowledge and skills students need to master in lieu of, or in addition to, the specific job skills that have been the objective of vocational education. Rather, the significance is its aim to structure a different way for students to learn about the world of work. It is not especially important, for example, that students in the Built Environment Program know asbestos constitutes a major health hazard in buildings constructed in the past 50 years. This problem may soon disappear. It is more important for students to understand molding the built environment carries with it potentially dangerous and often unanticipated health hazards and these are caused or exacerbated by technological, financial, historical, political, and cultural factors that happen to be operating. Being aware of these hazards, understanding how to identify them, and having strategies for figuring out how to address them is what students need to learn in developing an understanding of this aspect of an industry.

To promote this kind of learning, an industry-based curriculum needs to consider at least eight major influences on the functioning of an industry in modern America.

- *Structure and Organization*—what is the basic function of the industry in the economy, and how is production organized to yield its primary goods and services?

- *History*—how has the industry evolved, and what are the major historical forces that have influenced its development and are likely to continue to shape it in the future?

- *Technology*—what are the principles of technology upon which production depends, and how are these changing?

- *Economics*—how does the industry function economically—locally, regionally, nationally, and worldwide—and how does it interact economically with other industries?

- *Human Resources*—who works in the industry, what do they do, what do they need to know, how do they learn, and how do they interact with one another?

- *Government*—how does the industry interact with local, state, and federal governments as well as the governments of other nations?

- *Health and Safety*—what are the health and safety concerns associated with working in the industry?

- *Environment*—how does the industry interact with the natural, built, and social environment?

With each of these aspects, the curriculum emphasis should not be on a particular body of industry knowledge and skills—although students will most certainly need exposure to these—but on gaining experience with strategies for learning about each of these topics and understanding how they influence the functioning of an industry and workers' roles within it.

Delivering Industry-Based Curriculum

Delivering a coherent 4-year, industry-based curriculum at the high school level would require a minimum of about eight teachers. Six would be academic teachers—one each in English, math, history, social studies, foreign language, and two in science. Two would be vocational teachers. Hence, an industry-based program would probably involve around 200 students, assuming an average student/teacher ratio of about 25:1.

Most high schools, therefore, would be unable to offer the full array of 16 industry programs. Instead, high schools would specialize in selected industries. Some high schools, regardless of size, might organize the entire curriculum around a single industry—the ABC High School of Health or the XYZ High School of Transportation, for example. Other high schools might concentrate on two to four industries.* A high school's choice of particular industries would depend, in part, on the knowledge, interests, and skills of their existing teachers, as well as the potential for involving selected nearby related businesses. Districts with more than one high school, especially large cities, would presumably attempt to avoid program duplication and encourage schools, as a group, to offer a wide array of industry programs. Students would be free to choose among high schools in order to participate in the industry that most interested them. In effect, every high school would become a magnet school.**

Diverse program offerings and student choice would be more difficult to provide in smaller, more sparsely populated districts. Isolated rural areas, for example, would be hard pressed to offer a comprehensive program in even a single industry. Nevertheless, this is a curriculum problem inherent in the makeup of small, isolated schools regardless of the curriculum strategy adopted. Focus, even in these difficult situations, is still a worthy objective, and an industry-based curriculum is still feasible, albeit on a smaller scale and without some of the depth that is possible in a larger school.

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*These high schools would resemble some of the academy models, or schools-within-schools, that already organize curriculum around an industry or occupational cluster for subsets of students.

**This is not really a new idea. Phoenix, as part of its desegregation program, developed a specialized program (although not usually "industry based") at each of its high schools. Chicago Careers for Youth, at the urging of John Gnaedinger, has proposed an industry-based plan for Chicago's high schools. The strategy, however, is currently limited to very few school systems. The reason, in part, is these approaches have evolved as ad hoc local solutions without any common framework for wider replication. In any event, the magnet school strategy needs serious re-examination. As fine as some of these schools are, the strategy is really a kind of lottery or triage approach to education—a very fine education for a relatively small number of students able or fortunate enough to take advantage of the opportunity.

An industry orientation, of course, is not the only strategy for focusing curriculum, and the approach suggested here is compatible with other approaches to delivering secondary education. For example, larger urban districts, with some high schools organized around large industries, might also choose a nonindustry focus (perhaps science) for some other schools. Whatever the focus, however, it must be broad enough to avoid or minimize the stratification by social status, race–ethnicity, and sex that typify traditional curriculum offerings. An industry-oriented curriculum accomplishes this objective. By promoting it, however, we are not suggesting it is the only way to reorganize high schools or all students must choose an industry focus.

Roles for Academic and Vocational Teachers

An industry-based curriculum is not simply a reworking of traditional vocational offerings. On the contrary, it permeates the entire high school curriculum and will require modifications in curriculum content and teaching methodology by both academic and vocational teachers. The required changes, however, are not so radical as to paralyze action and stymie reform. It is possible to introduce an industry-based curriculum without eliminating the distinction between academic and vocational teachers or breaking down the boundaries of the traditional academic disciplines. As desirable as such changes may be, in most schools they are threatening to teachers and block progress rather than facilitate it.

Successful implementation of an industry-based curriculum would be helped, however, by three important modifications in the roles of academic and vocational teachers. First, academic and vocational teachers should be encouraged to view their roles as providing students with understanding and experience in an industry, in addition to the more specialized fields represented by their academic or vocational concentrations.* Second, and closely related to the first change, academic teachers should be encouraged to develop an industry specialization and vocational teachers an academic specialization. An English teacher, for example, might opt for an industry specialization in agriculture, and a Built Environment teacher might choose to specialize in math or history. Third, both academic and vocational teachers should seek to develop their curricula and teaching methods around more long-term student projects that address real issues and problems prevalent in their chosen industries. These projects would become one of the primary means for encouraging integration of knowledge and skills and applying them to real world situations.

Finally, serious consideration should be given to restructuring the organization of vocational credentials around industry rather than occupational classifications. As suggested earlier, it may even be desirable to drop the label "vocational teacher" and instead recognize these teachers as "industry specialists."

Roles for Business and Labor

An industry-based curriculum might considerably simplify the problem of creating an effective, wide-reaching role for business and labor in a national school-to-work initiative. As desirable as it might be, the prospect is extremely remote that business and labor in the United States will soon make the same commitment of time and resources as some of their European counterparts to a thoroughly integrated program of classroom instruction and work-based learning. If the school-to-work initiative depends on business and labor restructuring work and the kinds of jobs routinely available to young people and instead providing them with experience in high performance workplaces, the initiative will surely fail or at best reach a very small number of young people.

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*There are strategies for encouraging this industry identification. One approach would be to require all teachers, academic and vocational, to take an "industry sabbatical" of 6–9 months every 5 years. Similarly, an industry internship could become part of every teacher's student teaching experience.

The fact is most high school students work. For most of them, the jobs are not very high skilled, and they do not pay well. However, they are real, need to be done, and provide a useful introduction to the world of work. The educators' challenge is to develop an industry-based curriculum that effectively draws upon the experiences of students in the kinds of jobs they are most likely to obtain while in high school rather than expecting employers to create vastly different kinds of opportunities. A well-designed hospitality curriculum, for example, could make very effective use of the kinds of experiences students gain in fast-food jobs. A well-designed program could significantly increase the value of these experiences for students as well as employers.

Rather than focusing on changing job opportunities for students (a desirable goal, to be sure), the role of employers in an industry-based curriculum would consist of at least four functions. First, employers would be expected to provide a real work environment in which students can apply the knowledge and skills they acquire in the classroom. Wherever possible, employers should be expected to team a student worker with one or more journeymen who would serve as experienced mentors. Second, employers should be invited to participate in identifying broadly defined knowledge and skills that are likely to serve students well over the long term should they decide to pursue careers in a particular industry. Employers should not be allowed to solely determine or even dominate the definition of curriculum content. These issues are too important to be turned over to one interested party, whose vision may be short sighted and self-serving.

Third, employers should be expected to help identify and structure real problems student workers can investigate and attempt to solve. Employers need to be willing to work with teachers as well as students in this problem definition. These problems would become a central feature of the studios that are part of each student's annual program. Fourth, employers should participate in evaluating the performance of the student workers, especially their problem-solving and teamwork skills.

Employers can perform these functions best. They do not markedly interfere with their primary needs to focus on conducting business. Indeed, successfully performing these functions should enhance the productivity of their student workers. Restructuring the American workplace and upgrading the immediate employment opportunities of young people are important goals; however, they need not be added to the already large burden of fashioning an effective program of school-to-work transition.

Conclusion

Ever since vocational education began as a distinct course of study in the late 19th century, policymakers and educators have debated its relevance and have repeatedly called for change. Since 1906, there have been no fewer than 16 national studies or commissions—an average of one every 5 years—charged with assessing the educational aims of vocational education and its implications for social, employment, and economic development policy.[9] The findings and recommendations of these efforts are remarkably similar and consistent. The following two conclusions have appeared time and again:

- Vocational programs focus too narrowly on specific occupations; and
- Vocational education overemphasizes narrow occupational skills to the exclusion of more general academic knowledge, and programs function in isolation from the rest of education.[10]

For more than 80 years, the nation has made little progress on these two fronts. There are many reasons for this failure. One cause, however, has been the absence of a clear alternative framework for restructuring the high school curriculum to promote a wider focus. The approach outlined here is intended to stimulate serious discussion about how best to accomplish this aim.

Moreover, it should be apparent this task is not simply limited to changing vocational education in the United States. A successful school-to-work initiative depends on transforming both vocational and academic education. To single out vocational education for America's failure to prepare our youth for the world of work is to completely misunderstand the functioning of the nation's educational enterprise. We are a nation that has been very ambivalent about dedicating education to workforce preparation. Indeed, that ambivalence perhaps explains our predilection for isolating this responsibility in the vocational curriculum so we do not contaminate the rest of the curriculum with this suspect business.

Work is a central focus of the lives of nearly all Americans. It consumes a large proportion of our most productive hours. Preparing us to conduct this part of our lives efficiently and with a high degree of personal satisfaction should not be the only aim of education. It is, however, an objective that should permeate our school experience. It is too important, and potentially far too interesting, to be relegated to a small isolated corner of the school curriculum.

Notes

1. This problem has been well documented. For example, see Paul Osterman, *Getting Started: The Youth Labor Market* (Cambridge, MA: MIT Press, 1980); William T. Grant Foundation Commission on Work, Family, and Citizenship—Youth and America's Future, *The Forgotten Half: Non-College Youth in America* (Washington, DC: The William T. Grant Foundation, November 1988); and McKinley L. Blackburn, David E. Bloom, and Richard B. Freeman, "The Declining Economic Position of Less Skilled American Men," in *A Future of Lousy Jobs* (Washington, DC: The Brookings Institution, 1990).
2. E. Gareth Hoachlander, Phillip Kaufman, Karen Levesque, and James Houser, *Vocational Education in the United States: 1969–1990*, table 5, 17.
3. *Ibid.*, table 10, 27.
4. John Tuma, forthcoming.
5. Phillip Kaufman, *A Comparison of Vocational and Nonvocational Teachers in Grades 9 through 12* (Washington, DC: National Center for Education Statistics, 1992).
6. For an excellent discussion of the importance of focus in elementary and secondary education, see Paul Hill, *Schools with Character* (Santa Monica, CA: The RAND Corporation, 1992).
7. See V. Mitchell, E.S. Russell, and C.S. Benson, *Exemplary Urban Career-Oriented Secondary School Programs* (Berkeley, CA: National Center for Research in Vocational Education, University of California, Berkeley, MDS–012, September 1990); Larry Rosenstock, "The Walls Come Down: The Overall Reunification of Vocational and Academic Education," *Phi Delta Kappan* (February 1991): 434–437.
8. Section 113 (a)(3)(B)(i), emphasis added.
9. For an excellent summary, see Stuart Rosenfeld, *What Goes Around Comes Around: Studies of Federal Vocational Policy* (Chapel Hill, NC: Regional Technology Strategies, August 1993).
10. *Ibid.*, 5–7.

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6. Profile of the Target Population for School-to-Work Transition Initiatives

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Introduction

School-to-work transition has become one of the hottest topics in education reform. Motivated by concerns that students are leaving high school inadequately prepared to succeed in today's workplace and international competition is threatening to undermine our economic security, many states and local agencies have been developing policy initiatives to promote the integration of academic and vocational curricula and expand career-related programs, such as cooperative education, youth apprenticeship, tech-prep, and career academies. The recently proposed School-to-Work Opportunities Act of 1993, which would establish a national framework for developing school-to-work opportunity systems in all states, has added momentum to these efforts.

Students who go immediately from school to work without any postsecondary education were the original target for career-related education. However, as increasing numbers of educators and policymakers have realized work-based learning and greater integration of academic and vocational education would benefit all students, the target population has been broadened. The proposed School-to-Work Opportunities Act requires states that seek federal funding to provide opportunities for *all* students, including disadvantaged students; students of diverse racial, ethnic, and cultural backgrounds; students with disabilities; students with limited English proficiency; and academically talented students.

Despite the need to serve all students, these programs serve different purposes for different types of students, and no one program will meet the needs of all students. For example, students bound for 4-year colleges need an overall understanding of the world of work and the academic background required for various occupations. Although these students would profit from an opportunity to work in a field related to their interests to help them choose a career, most students would not have to learn specific job skills in high school. Students who plan to work immediately after high school, on the other hand, need not only an opportunity to explore possible careers but also a chance to start learning general work and job-specific skills while still in high school. Students who plan to have some postsecondary education but to attain less than a bachelor's degree need less occupationally specific training than students going immediately to work, but they need a carefully articulated program that links their educational experiences in high school with a specific postsecondary program.

Also, educators and policymakers will have to set priorities about who will be served because developing and implementing appropriate opportunities for all students will be a long, difficult process. Thus, the more we know about subgroups of students, the easier it will be to design programs and target those in most need first.

To help support efforts to improve the school-to-work transition and focus policy discussions, this paper tries to answer some important questions about high school seniors and their plans and about the early labor market experiences of American youth. Specifically, it considers the following questions:

- What do high school seniors plan to do after high school, and when do they decide this?

- What are the backgrounds and academic experiences of students who plan to enter the labor force immediately, and how do they differ from those of students who plan different types of postsecondary education?

- What are the early labor market experiences of high school students, recent high school graduates, and dropouts?

Addressing these questions, we relied primarily on two data sources: the National Education Longitudinal Study of 1988 (NELS:88), including the base year and first and second followups; and the Current Population Survey (CPS). Through NELS:88, the National Center for Education Statistics is following (at 2-year intervals at least through 1994) a nationally representative sample of approximately 20,000 individuals who were eighth-graders in 1988. Information is now available on students' backgrounds, academic and work experiences, and plans for the future from surveys administered in 1988, 1990, and the spring of 1992. For most of the sample, this was their final term in high school.

The CPS, conducted each month by the Bureau of the Census, collects labor force data on all individuals in a nationally representative sample of about 60,000 households. Each October, a set of supplementary questions on education is added, making it possible to examine the link between work experience and education for individuals by age, sex, and race–ethnicity. The October 1992 CPS and supplement are used here to address the question about labor market experiences.

Post-High School Plans of 12th-Graders

Plans for Right After High School

By spring of their senior year in high school, as might be expected, most 1992 12th-graders had decided what they were going to do after graduation. What is striking is how heavily postsecondary education figured into those plans. About one-half (49 percent) of all 12th-graders reported at that time they planned to enroll in a 4-year college or university right after high school, and 71 percent reported they intended to enroll in some type of postsecondary education (table 1 and figure 1). Fifteen percent planned to work full time, and 5 percent were going to join the military. The rest (about 9 percent) either did not know what they were going to do or had other plans (such as working part time or becoming a full-time homemaker).[*]

As one would expect, students' post-high school plans varied with their background, academic ability, and high school program. Among those particularly likely to be planning to pursue postsecondary education right after high school were students who were female (76 percent), Asian (79 percent), living with their mother and father (75 percent), from families in the highest socioeconomic status (SES) quartile (87 percent), and from families where at least one parent had a 4-year degree or more (86 percent).[11]

Eighty-seven percent of the 12th-graders in the highest test quartile on cognitive tests in reading and mathematics administered by NELS were headed for postsecondary education; 80 percent planned to attend 4-year colleges and universities. Nevertheless, even among those in the lowest test quartile, 53 percent planned to pursue further education right after high school, with 20 percent planning to attend a 4-year institution.

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[*] Students were asked whether they planned to go to postsecondary education right after high school, and if they said that they did not plan to go or that they did not know, they were asked if they planned to work full time. Thus, any students who planned to go to postsecondary education and also work full time were counted as going to school.

Seniors enrolled in vocational, technical, or business programs were especially likely to be planning to work full time (31 percent); enroll in a technical, vocational, or trade school (8 percent); or enroll in a 2-year vocational program in a community or junior college (13 percent). Seniors enrolled in academic programs were headed overwhelmingly to postsecondary education (88 percent), especially 4-year institutions (74 percent). Seniors in general programs were in between these two groups; for example, they were less likely than those in vocational, technical, or business programs to plan to work (20 percent rather than 31 percent), but also less likely than those in academic programs to plan immediate postsecondary enrollment (64 percent compared with 88 percent).

The percentage of 12th-graders who planned to work full time was somewhat higher in rural than in urban or suburban high schools. This is not surprising, because postsecondary opportunities tend to be less accessible to rural residents unless they are willing and able to move away from home.

Expectations About Educational Attainment

In addition to reporting their plans for right after high school, 12th-graders indicated how far they thought they would ever get in school. Expectations were high, with more than 9 out of 10 12th-graders expecting to continue their education beyond high school at some point, even if not right after high school. A sizable majority expected to earn either a 4-year degree (33 percent) or a graduate or professional degree (30 percent) (table 2). Only 6 percent thought they would earn no more than a high school diploma.

High school seniors' expectations appear to have increased during the past decade or so. When 1980 high school seniors were asked how far they thought they would get in school, 81 percent reported they planned to continue their education beyond high school. Twenty-five percent expected to earn a 4-year degree, and 21 percent anticipated a graduate or professional degree. Twenty percent thought their formal education would end with high school or less.[12] Predictably, students with different immediate post-high school plans had different longer term expectations, but postsecondary education was a common theme. Of the 1992 high school seniors who planned to work right after leaving high school, 23 percent thought they would not go beyond high school (table 2). The most, however, expected to further their education at some point. The most common plan was to attend a vocational, trade, or business school (25 percent), but many had higher expectations, including 18 percent who expected to earn some college credit but less than a 4-year degree, 15 percent who expected to earn a 4-year degree, and 9 percent who thought they would receive a graduate or professional degree.

Of the 12th-graders whose first postsecondary plans were to enroll in a 2-year academic program, 30 percent thought they would earn a 4-year degree eventually, and another 18 percent thought they would receive a graduate or professional degree. Moreover, of those who planned to start with a 4-year degree, 44 percent thought they would receive a graduate or professional degree.

Of the high school seniors planning to join the military right after high school, only 14 percent expected their formal education to end with high school. About half expected to earn a 4-year or graduate or professional degree.

The 12th-graders were also asked how far their mothers and fathers wanted them to go. Forty percent reported their mothers wanted them to earn a 4-year degree, and 31 percent reported a graduate or professional degree (table 3). Only 5 percent thought their mothers wanted them to end their formal education with a high school diploma or less. Fathers' expectations (as reported by the students) were similar and therefore are not shown here.

Are the students' and parents' expectations for postsecondary participation realistic? Obviously, it is too soon to tell for this group, but historical data suggest not all will go as far as they expect. Of the 1980 high school graduates who in their senior year had planned to attend a vocational–technical or 2-year institution, about 58 percent had done so by 1986: 23 percent had enrolled in a less-than-2-year institution and 35 percent had enrolled in a 2-year institution. Of those whose plans as high school seniors had been a 4-year college or an advanced degree, 81 percent had enrolled in a 4-year institution by 1986.[13]

Comparison of Post-High School Plans with Expectations in 8th and 10th Grades

Because students with different post-high school plans need different school-to-work transition opportunities in high school, knowing early in a student's high school career which path a student is likely to take would make it easier to ensure that the student is enrolled in an appropriate program. This will be hard to do, because the overwhelming majority of high school students expect to continue their education beyond high school. In eighth grade, 93 percent of all students reported either they were very sure they would or they probably would go on for further education after they left high school, although not necessarily right away (table 4). By 10th grade, it was still 92 percent. The expectation of postsecondary education was consistently high for all subgroups of students shown in table 4. Even among students in the lowest test quartile, 82 percent reported in 10th grade they were very sure they would or thought they probably would continue their education after high school. The students who reported in 12th grade that they planned to work full time right after high school were the least likely to have thought earlier they would continue in school. Of these, 83 percent reported in 8th grade and 77 percent in 10th grade that they expected to pursue further education after high school.

When they were in 12th grade, about 71 percent of the students planned to begin postsecondary education right after high school (table 1), which is considerably less than the 92 percent who reported postsecondary education plans in 10th grade (table 4). This does not necessarily mean they had diminished expectations between 10th and 12th grades because the 12th-graders' responses in table 1 reflect only their immediate plans. When the students' expectations about how far they would get in school are taken into consideration (table 2), we see that all but 12 percent expected to pursue postsecondary education, and half of these students did not know whether they would or would not. Thus, overall, students' educational aspirations do not appear to diminish between the 10th and 12th grades.

Table 5 shows many individuals shifted their expectations, however. For example, of 12th-graders who expected to go no further than high school, 63 percent had higher expectations in 8th grade and 50 percent had higher expectations in 10th grade. At the other end of the spectrum, most 12th-graders who expected to earn a graduate or professional degree had lower expectations in 8th grade, probably because they were less aware of career opportunities and educational requirements.

Student's Perceptions of Educational Requirements for Anticipated Jobs

Students' educational aspirations are bound to be tied closely to their understanding of the education requirements for the types of jobs they expect to hold. Students were asked if they thought they had enough skills right now for the job or career that they saw themselves holding 5 years after high school. Overall, only 11 percent thought they did (table 6), whereas the majority (61 percent) thought that they would need a college education.

Of the students who planned to work right after high school, 26 percent thought they already had enough skills for the job they would have in 5 years. Another 26 percent thought they would need to go to college. The rest thought they would need additional work experience or on-the-job training (16 percent), additional job training or an apprenticeship (20 percent), or they would need to go to a vocational or trade school (13 percent).

Students were also asked to look ahead and estimate the educational requirements for the job they expected to have when they were 30 years old (table 7). Of the students who expected to be working at age 30, only 6 percent overall and 22 percent of those who planned to work right after high school thought they would need only a high school diploma or less.

In summary, high school students appear to be strongly oriented toward postsecondary education. Their own expectations, their parents' aspirations, and their perceptions of the education requirements for the jobs they expect to hold all include postsecondary education. Given the emphasis placed on a college degree as the most promising route to success in our society, this finding is not surprising. It also demonstrates how crucial it is that school-to-work transition programs include preparation for postsecondary education. Although data from 1980 seniors suggest not all students who expect to undertake postsecondary education will (at least not within 6 years of high school graduation), most students or their parents will simply not accept programs unless the possibility of postsecondary education is built in—and not just 2-year degrees. Needless to say, many students who plan to start with 2-year degrees hope to go further eventually.

Background and Experiences of High School Seniors

Table 1 shows 15 percent of 1992 high school seniors planned to work full time right after high school. Who were these students, and how did they differ from the 71 percent who planned to enroll in postsecondary education? And why did they choose work over postsecondary education?

Demographic and Socioeconomic Characteristics

The 1992 seniors who planned to work full time right after high school were slightly more likely to be male, and those who planned to enroll in postsecondary education were slightly more likely to be female (table 8a). While 59 percent of the seniors who planned to attend technical, vocational, or trade schools were male, other potential postsecondary students were more evenly split between the sexes. Those who planned to enter the military were predominantly male (84 percent).

Seniors who planned to work full time or join the military were more likely than those who planned to enroll in postsecondary education to come from the lowest two SES quartiles. (more than 60 percent compared with 37 percent). There were also differences depending on the type of postsecondary institution they planned to attend. Between 60 percent and 70 percent of seniors who planned to attend technical, vocational, or trade schools or 2-year vocational programs fell within the two lowest SES quartiles. In contrast, about one-third the students who planned to attend 4-year colleges came from the two lowest SES quartiles.

Parents' educational attainment, which is closely related to SES, is similarly related to students' post-high school plans. Seniors who planned to work or enter the military right after high school were much less likely than those with plans for postsecondary education to have a parent with a 4-year degree or more (table 8b). Seniors headed for full-time work or the military immediately following high school were less likely than those headed for postsecondary education to have lived with both parents when they were in the eighth grade.

This comparison of high school seniors based on their post-high school plans indicates some characteristics of students whose post-high school plans do not include postsecondary training are similar to those that are associated with students at risk for school failure or dropping out. Moreover, seniors whose postsecondary plans included attending technical, vocational, or trade schools or 2-year vocational programs were more likely than seniors who thought they would attend 4-year colleges or universities to share this set of characteristics. The demographic and socioeconomic characteristics of the target population being served must be considered when designing school-to-work opportunities, but the diversity of each population must also be respected. Educators and policymakers must be careful not to assume that students from the lower SES quartiles, for example, will not go to college.

School Characteristics

Students' plans for the period immediately following high school and their plans for postsecondary education varied according to the geographic areas where they attended school, and these differences may affect the planning and implementation of school-to-work programs. Nearly 40 percent of students who planned to work full time or serve in the military immediately following graduation attended schools in rural areas (table 9). Similarly, students who thought they would attend technical, vocational, trade schools, or 2-year vocational programs if they went on to school were more likely than students who thought they would attend 2-year academic programs or 4-year colleges to live in rural areas. Because finding work-experience placements for students may be more difficult in rural than in urban or suburban areas, school-to-work programs may be most needed in areas where they are difficult to supply.

Academic Experiences

Seniors with different immediate post-high school plans had predictably different academic experiences in high school. Those who planned to work full time or serve in the military were less likely than those with postsecondary plans to be in the academic track in high school, have been involved in extracurricular activities, or have been enrolled in an Advanced Placement program (tables 10a–c). Moreover, these students were more likely to score in the lowest three quartiles on standardized tests, have grades in the lowest quartile, and have been enrolled at some point in a remedial mathematics or English program. Students who thought they would attend technical, vocational, trade schools, or 2-year programs if they went on to postsecondary education were more similar to students who planned to work than to students who thought they would attend 4-year colleges or universities.

Reasons for Not Continuing Their Education

Students who reported they did not plan to continue their education right after high school were asked if certain reasons were factors in that decision. Of the students who planned to work full time, 39 percent said "yes" to one or more reasons related to their academic preparation (their grades or college admissions test scores were not high enough; they were not accepted at any of the schools they applied to; they had not taken the right courses; or their counselors or teachers recommended they work rather than continue their education) (table 11). Fifty-five percent acknowledged financial reasons (they could not afford to go to school, or they needed to help support their family). Moreover, 90 percent said "yes" to other reasons related to personal preference or background (they did not like school; they did not need more education for the career they wanted; no one in their family had ever gone beyond high school; they wanted some time off before going to school; they preferred working and making money to going to school; they did not think that going on to school was important; or they planned to be a full-time homemaker).

Females were more likely than males to cite financial reasons, as were blacks and Hispanics, compared with whites. Students in general or vocational programs were considerably more likely than those in academic programs to have cited academic reasons (42 percent and 37 percent compared with 22 percent). One-half of the students in the lowest test quartile gave academic reasons for not going on with school right away.

Early Labor Market Experiences

The transition from school to work is actually a gradual process that often begins long before a student leaves high school. Many students begin their working career while still in school with jobs such as babysitting, mowing lawns, and doing odd jobs for friends and neighbors. As they get older, many work in stores, restaurants, or offices after school, on weekends, and in the summer. Many who continue on to postsecondary education work to help support themselves while in school. This section describes the work experiences of high school and postsecondary students. It also examines and compares the experiences of high school completers and dropouts.

High School Seniors

Most 1992 high school seniors (86 percent) had worked at some time for pay outside their own home (table 12). Although they held a wide range of jobs, about one-quarter of the students had worked as fast food workers, waiters, or waitresses in their most recent job and 15 percent as grocery clerks or cashiers. Another quarter of the jobs were not categorized by NELS.[14] Working was common across all subgroups, but the students least likely to work were those in racial–ethnic minority groups (74–80 percent had ever worked for pay), in the lowest test quartile (76 percent), in the lowest SES quartile (79 percent), with limited English proficiency (73 percent), and in schools where more than one-half of the students received free lunches (80 percent).

Eighty percent of high school seniors worked during their final year of school. More than a quarter of them usually worked more than half time: 21 percent worked 21–35 hours, and 7 percent worked even more than that. Students who planned to work full time or join the military right after high school were much more likely than the college bound to work more than 20 hours a week. Students planning to enter less-than-4-year institutions were more likely than those planning to attend 4-year colleges or universities to work more than 20 hours a week. The seniors most likely to work 10 hours a week or less were those in the upper two test quartiles, enrolled in academic high school programs, and from families in the highest SES quartile.

The majority of the high school seniors (77 percent) were making between minimum wage and $6 per hour. Males were considerably more likely than females to make more than $6 per hour (18 percent compared with 9 percent). Wages appeared to be related to economic opportunities. For example, students from families in the highest SES quartile and who attended schools in suburban areas in the Northeast and West in which no more than 5 percent of the students received free lunches were the most likely to be earning more than $6 per hour.

The Current Population Survey (CPS) data give a somewhat different picture of high school employment. These data indicate that 23 percent of high school students were working during the week they were surveyed in October 1992 (table 13). Because high schoolers are more likely to work as they get older, the percentage of 18-year-olds working was larger—36 percent, with another 1 percent employed but not working during the reference week. However, this is still considerably less than the proportion of high school seniors who reported in the NELS survey they had worked during the 1991–92 school year (80 percent). The difference suggests that high schoolers move in and out of the labor market. Even though just over one-third of 18-year-olds appear to be working at any one time, more than three-quarters work at some time during the school year.

Job opportunities do not appear to be evenly distributed across racial–ethnic groups or locations. Blacks, Hispanics, and other minorities were less likely than whites to work, and central city high school students were less likely than students residing in other areas to work.

Postsecondary Students

As background to the discussion of the employment status of postsecondary students, table 14 provides an overview of the enrollment status of young adults aged 17–24. In October 1992, the vast majority of 17-year-olds (86 percent) and 28 percent of 18-year-olds were still enrolled in high school. About one-third of the 19- to 21-year-olds were enrolled in 4-year colleges and universities. Between 14 percent and 17 percent of 18- to 20-year-olds attended 2-year colleges. Among 24-year-olds, 38 percent had some postsecondary experience but were no longer enrolled, and about another 20 percent were still enrolled. At each age over 17, about 12 to 13 percent of young adults had no high school diploma and were not enrolled in school.

Although work and school are often talked about as alternative paths to take after high school, many young people are combining the two. Of the 17- to 24-year-olds who were enrolled in postsecondary education in October 1992, just over one-half (53 percent) were also working—17 percent in 2-year colleges, 32 percent in 4-year colleges, and 4 percent in vocational and technical schools (table 15). The percentage working increased with age from 33 percent at age 17 to 67 percent at age 24. Males and females were about equally likely to combine work with school, but blacks and central city residents who were enrolled in postsecondary education were less likely to be working than those in other racial–ethnic groups or locations.

The patterns were different in 2- and 4-year colleges. Students attending 2-year colleges were more likely to be working while going to school than not working. On the other hand, in 4-year colleges, students were about equally likely to be working and not working overall, although some variation occurred by age. Older students were more likely than younger ones to work in 4-year institutions.

High School Completers

In October 1992, high school graduates between the ages of 17 and 21 had a wide range of work and school experiences (table 16). Thirty-nine percent were enrolled in 4-year institutions (17 percent employed and 22 percent not employed); 30 percent were working full or part time (or employed but not at work during the week preceding the survey); and 17 percent were enrolled in 2-year institutions (11 percent employed and 6 percent not employed) (table 16).

Although unemployment (at 5 percent) did not seem to be a serious problem for high school graduates overall, it was for blacks. Their unemployment rate was 12 percent, compared with 3 percent for whites. An additional 14 percent of blacks were not in the labor force, compared with 5 percent of whites.

What 17- to 21-year-old high school graduates were doing varied, of course, by age within this group. At ages 17–19, the most of high school completers were enrolled in postsecondary education, especially in 4-year institutions (figure 3). At the older age levels, increasing percentages were working as they finished or dropped out of postsecondary education. At age 21, as they entered the prime child-bearing period, 12 percent of females were not in the labor force.

High School Dropouts

High school dropouts do not fare nearly as well as high school graduates in the labor market. Of 15- to 24-year-olds who were not enrolled in any school and who had not completed high school, 31 percent were employed full time; 15 percent were working part time; 15 percent were unemployed; and 38 percent were not in the labor force (table 17). The pattern varied by sex, age, and race–ethnicity, however. Females were much less likely than males to be employed full time (15 percent compared with 47 percent) and were much more likely not to be in the labor force (57 percent compared with 19 percent). Males were more likely to be employed full time as they got older—among male dropouts 23 and 24 years old, 59 percent were employed full time. The same was not true for females. At age 24, only 14 percent were employed full time, while 62 percent were not in the labor force. Blacks aged 15–24 were much less likely than individuals in other racial–ethnic groups to be employed full time and were much more likely to be unemployed or not to be in the labor force.

The dropout rate has declined over the past decade or so.[15] Whereas about 11 percent of 1980 10th-graders had dropped out of school by 1982, approximately 6 percent of 1990 10th-graders had dropped out of school by 1992. Nevertheless, students who leave before completing high school remain an important concern of educators and policymakers. Compared with high school completers, young people who do not complete high school are less likely to find employment and earn less over the course of their lifetimes. And although many students who do not complete high school on time do so later, either by returning to school or by completing a GED, on average these students remain at a disadvantage compared with their peers who complete high school on time. Given the reasons that students report for leaving school early, it appears that school-to-work transition programs may offer dropouts additional reasons to stay in school.

Many students leave school because they do not like school or are not doing well (are failing or have poor grades). In 1982, about 30 percent of 10th- to 12th-grade dropouts reported that they left school for these reasons. By 1992, this proportion rose to 40 percent.[16] Thus, to the extent that students who do not enjoy traditional academic curricula or are not successful in them find school-to-work transition programs enjoyable or can be successful in them, such programs may offer a useful tool in the effort to reduce the drop out rate.

In addition, school-to-work programs might also help decrease the dropout rate by reducing the conflict that some students have between wanting to attend school and wanting to work for pay. In 1992, 23 percent of students reported they left school because they could not work and go to school at the same time, and 29 percent reported that they left school because they had already found a job. More than one-third of Hispanic dropouts reported that they left school because they were already working. An additional 11 percent of 10th- to 12th-grade dropouts reported leaving because they had to support their families, and among Hispanic dropouts, 16 percent reported leaving for this reason.[17] For students who help to support their families, attending school may be a luxury they can ill afford. Consequently, school-to-work programs that offer paid work experience might allow such students to continue their education and at the same time contribute to their families' support.

Conclusion

In 1992, high school seniors planned overwhelmingly to enroll in postsecondary education (although not always right after graduation), and their parents supported this aspiration. Although we can predict from past experience that not all students will actually follow through with their plans and that many of them will leave without completing a degree, policymakers would be well advised to recognize the importance of further education to high school students and their families. The lesson is that all school-to-work programs should include preparation for postsecondary education as an option, or these programs will not be accepted by students or their parents.

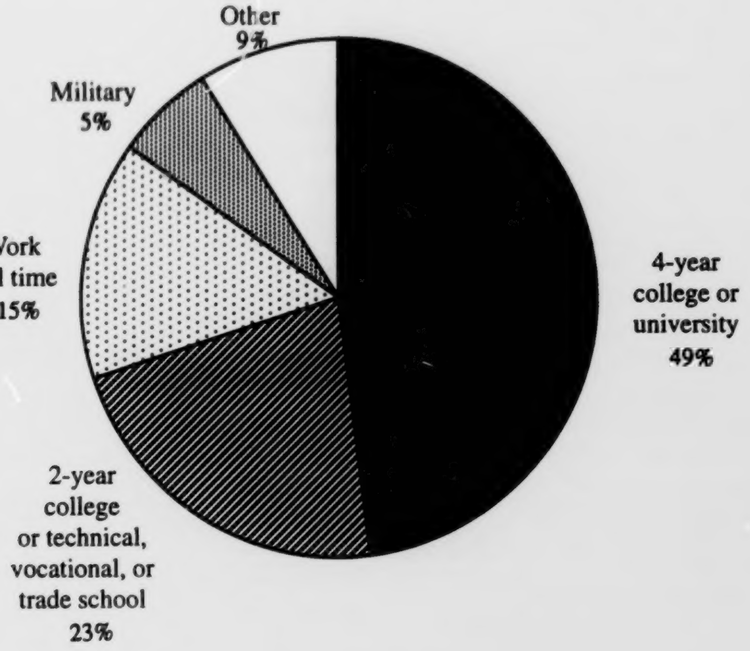
The 1992 high school seniors who planned to work or enter the military immediately after graduation had different family backgrounds and academic experiences from those who planned to go on to postsecondary education. For instance, they were more likely to come from less privileged backgrounds and were less likely to be enrolled in the academic track. Seniors who planned to attend a less-than-4-year institution more closely resembled those who planned to work than those who planned to enroll in a 4-year college or university.

By the time students reach their senior year in high school, most of them have already worked for pay. More than one-half of the 1992 high school seniors usually worked more than 10 hours per week during their senior year. About one-half of 17- to 21-year-old postsecondary students worked while in school. This means that the majority of students are learning what it means to work and are probably receiving at least some on-the-job training. Trying to find ways to link this experience with what they are learning in school could serve the students well. Developing structured work-based learning opportunities out of at least some jobs that students already have would be much more efficient than trying to develop new opportunities for all students.

Based on October 1992 data, unemployment per se does not appear to be a serious problem for recent high school graduates (17–21 years old) overall, although we know nothing about the quality of the jobs they held. However, unemployment is a serious problem for black high school graduates, who had an unemployment rate four times as high as whites. In addition, almost three times as many blacks as whites were not in the labor force. This group must be a priority target.

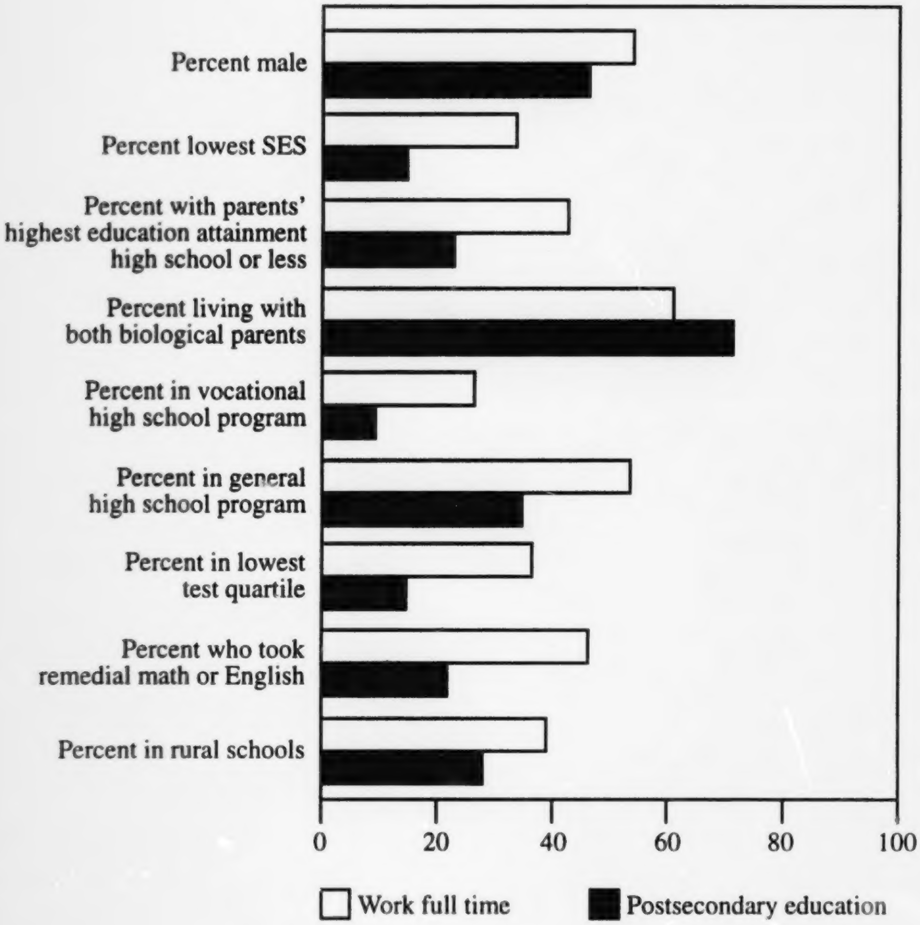
High school dropouts in the same age group had a much higher unemployment rate than high school graduates and were much more likely not to be in the labor force at all. The problem was particularly severe for females. At age 21, 71 percent of female high school dropouts were unemployed or not in the labor force, compared with 15 percent of female high school graduates. These data strongly suggest that to the extent that school-to-work transition programs can serve as dropout prevention programs, students at risk of dropping out of school should receive the highest priority.

Figure 1.—High school seniors' plans for right after high school: 1992



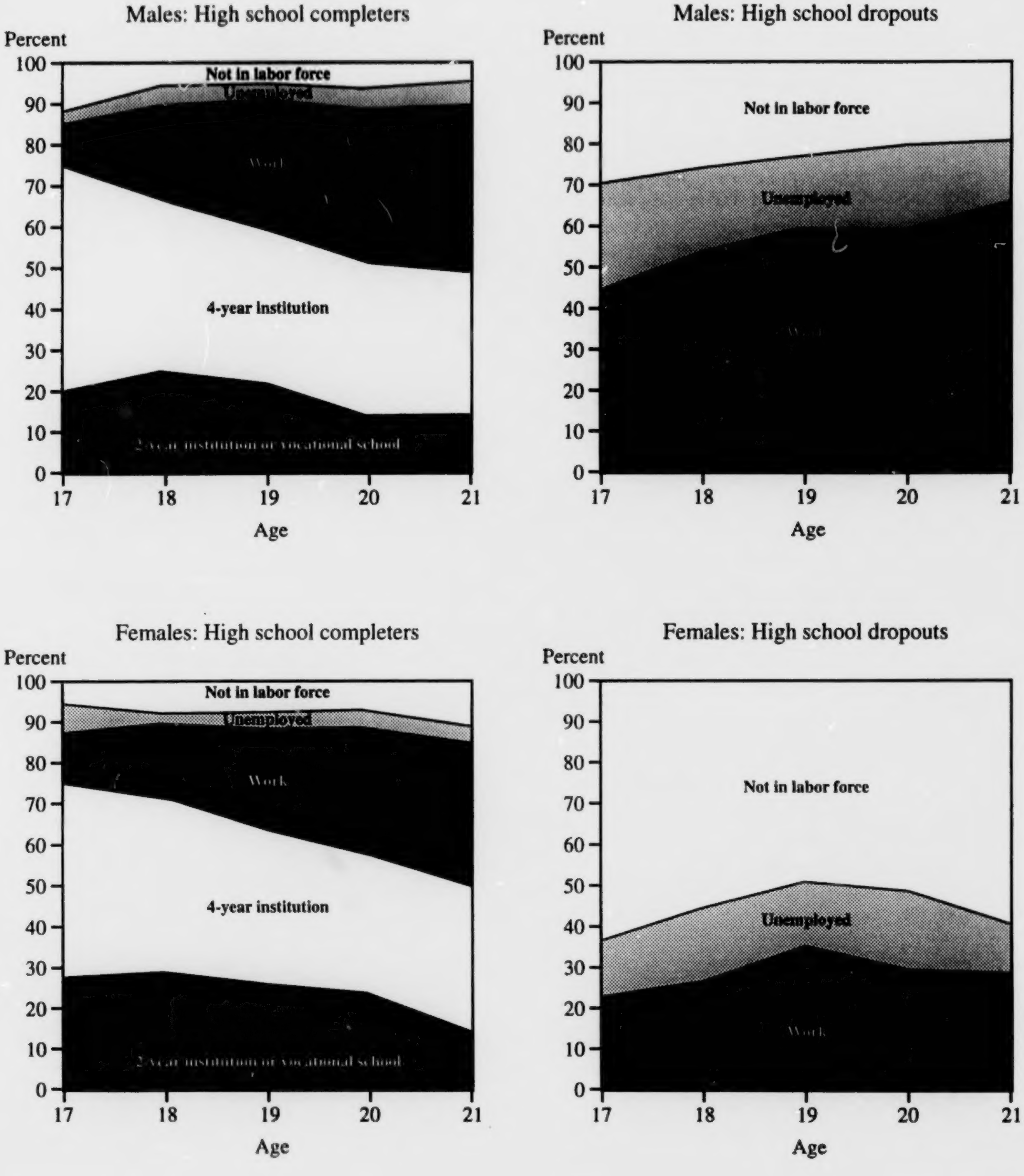
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Educational Longitudinal Study, "Second Follow-Up," 1992.

Figure 2.— Comparison of high school seniors who planned to work right after high school with those who planned to enroll in postsecondary education: 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Educational Longitudinal Study, "Second Follow-Up," 1992.

Figure 3.—Education and labor market status of high school completers and dropouts: October 1992



SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, October, 1992.

Table 1.—Percentage of high school seniors with various plans for the period immediately following high school graduation: 1992

Characteristics	Work full time	Military service	Any post-secondary education	Technical, vocational, or trade school	2-year college: vocational program	2-year college: academic program	4-year college or university
Total	15	5	71	4	6	13	49
Student characteristics							
Sex							
Male	16	9	67	4	6	11	46
Female	14	2	76	3	6	14	53
Race–ethnicity							
Asian/Pacific Islander	10	5	79	2	4	12	62
Hispanic	17	6	68	3	7	19	40
Black, non-Hispanic	11	7	70	6	6	13	46
Amer. Indian/Native Al.	20	11	57	7	4	14	32
White, non-Hispanic	15	5	72	4	6	12	51
12th-grade test quartile							
First (lowest)	26	7	53	7	10	16	20
Second	17	7	66	5	8	15	37
Third	12	4	78	3	4	13	58
Fourth (highest)	4	4	87	1	2	5	80
High school program							
General	20	6	64	4	7	17	36
Academic/college prep	5	4	88	1	2	10	74
Vocational, technical, business	31	8	49	8	13	10	18
Other	19	4	63	7	7	16	33
LEP status in 8th grade							
LEP student	18	5	66	9	7	18	32
Not LEP student	14	5	72	4	5	13	51
Family characteristics							
Socioeconomic (SES) quartile							
First (lowest)	26	8	54	6	8	13	27
Second	19	7	64	5	8	15	37
Third	13	5	75	3	6	14	52
Fourth (highest)	6	3	87	2	2	9	74
Parents' educational attainment (highest of mother or father)							
High school or less	23	7	59	6	8	13	32
Less-than-4-year degree	15	6	70	4	7	15	45
4-year degree or more	6	3	86	1	2	9	74
Family composition in 8th grade							
Mother and father	13	4	75	3	5	12	55
One parent, one other guardian	20	7	65	5	6	15	39
Single parent or other	15	7	66	4	6	13	44

Table 1.—Percentage of high school seniors with various plans for the period immediately following high school graduation: 1992—Continued

Characteristics	Work full time	Military service	Any post-secondary education	Technical, vocational, or trade school	2-year college: vocational program	2-year college: academic program	4-year college or university
School characteristics							
Urbanicity							
Urban	12	5	76	3	4	13	56
Suburban	14	5	75	3	6	13	52
Rural	18	7	66	5	6	11	43
Region							
Northeast	11	5	78	2	4	12	60
North Central	15	5	73	4	6	10	53
South	15	6	69	4	6	11	48
West	16	5	70	3	6	19	42
Percent free-lunch recipients							
0–5	10	4	81	3	4	13	62
6–20	17	4	71	3	5	12	51
21–50	17	6	67	5	6	12	44
51–100	16	8	66	5	7	15	39

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 2.— Percentage distribution of high school seniors, by expected level of educational attainment: 1992

Plans	High school diploma or less	Vocational, trade, or business school	Less than 4-year degree	4-year degree	Graduate or prof. degree	Did not know
Total	6	11	14	33	30	6
Plans immediately after high school						
Work full time	23	25	18	15	9	10
Military service	14	12	13	27	22	13
Postsecondary education	1	7	12	39	38	3
Type of postsecondary education planned*						
Technical, vocational, or trade school	13	51	11	6	6	13
2-year college: tech/voc/trade program	8	35	30	12	8	8
2-year college: academic program	5	8	33	30	18	6
4-year college or university	1	1	5	45	44	4

* Includes those who will not continue their education immediately after high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 3.—Percentage distribution of high school seniors, by the level of education their mothers wanted them to attain: 1992

Plans	High school diploma or less	Vocational, trade, or business school	Less than 4-year degree	4-year degree	Graduate or prof. degree	Did not know
Total	5	8	9	40	31	8
Plans immediately after high school						
Work full time	13	18	13	26	13	16
Military service	13	7	7	35	24	14
Postsecondary education	2	5	8	44	36	5
Type of postsecondary education planned*						
Technical, vocational, or trade school	9	39	10	15	13	15
2-year college: tech/voc/trade program	9	23	23	20	13	12
2-year college: academic program	4	5	22	38	23	8
4-year college or university	2	1	3	49	41	4

* Includes those who will not continue their education immediately after high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 4.— Percentage of 12th-grade students who had thought as 8th- or 10th-graders that they would enter postsecondary education: 1992

Characteristics	Very sure or probably sure in 8th grade	Very sure or probably sure in 10th grade
Total	93	92
Student characteristics		
Plans immediately after high school		
Work full time	83	77
Military service	89	89
Postsecondary education	97	97
Type of postsecondary education planned*		
Technical, vocational, or trade school	84	81
2-year college: tech/voc/trade program	87	86
2-year college: academic program	93	93
4-year college or university	98	98
Sex		
Male	92	90
Female	94	94
Race–ethnicity		
Asian/Pacific Islander	96	95
Hispanic	94	91
Black, non-Hispanic	95	93
Amer. Indian/Native Al.	84	88
White, non-Hispanic	93	92
12th-grade test quartile		
First (lowest)	87	82
Second	91	90
Third	95	95
Fourth (highest)	99	99
High school program		
General	91	90
Academic/college prep	98	98
Vocational, technical, business	86	83
Other	89	89
LEP status in 8th grade		
LEP student	86	85
Not LEP student	93	93
Family characteristics		
Socioeconomic (SES) quartile		
First (lowest)	86	84
Second	91	89
Third	96	95
Fourth (highest)	98	98

Table 4.— Percentage of 12th-grade students who had thought as 8th- or 10th-graders that they would enter postsecondary education: 1992—Continued

Characteristics	Very sure or probably sure in 8th grade	Very sure or probably sure in 10th grade
Parents' educational attainment (highest of mother or father)		
High school or less	88	86
Less-than-4-year degree	94	93
4-year degree or more	97	98
Family composition in 8th grade		
Mother and father	94	93
One parent, one other guardian	93	91
Single parent or other	90	91
School characteristics		
Urbanicity		
Urban	96	94
Suburban	94	94
Rural	91	89
Region		
Northeast	95	93
North Central	93	91
South	92	92
West	95	94
Percent of free-lunch recipients		
0–5	95	96
6–20	93	92
21–50	92	91
51–100	91	89

* Includes those who will not continue their education immediately after high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 5.—Percentage of high school seniors whose expectations for their educational attainment were the same, lower, or higher in 8th grade and in 10th grade: 1992

	8th-grade expectations			10th-grade expectations		
	Same	Lower	Higher	Same	Lower	Higher
Total	44	31	26	50	29	22
12th-grade expected educational attainment						
High school diploma or less	37	0	63	50	0	50
Vocational, trade, or business school	23	19	58	39	18	43
Less-than-4-year degree	22	25	53	38	28	34
4-year degree	59	19	21	51	25	24
Graduate or professional degree	44	56	0	58	42	0

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 6.—Percentage distribution of high school seniors, by the amount of training they reported they would need for the job they expected to have in 5 years: 1992

Plans	Have enough skills	Work experience or on-the-job training	More job training or apprenticeship	Vocational or trade school	2- or 4-year college or university
Total	11	8	15	7	61
Plans immediately after high school					
Work full time	26	16	20	13	26
Military service	14	16	26	5	39
Postsecondary education	6	5	12	5	72
Type of postsecondary education planned*					
Technical, vocational, or trade school	21	14	22	34	9
2-year college: tech/voc/trade program	15	14	23	19	29
2-year college: academic program	10	9	17	3	61
4-year college or university	6	4	10	1	79

*Includes those who will not continue their education immediately after high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 7.—Percentage distribution of high school seniors who were planning to work at age 30, by the amount of education they reported they would need for the job they expected to have at age 30: 1992

Plans	High school diploma or less	Vocational, trade, or business school	Less than 4-year degree	4-year degree	Graduate or prof. degree
Total	6	16	10	38	29
Plans immediately after high school					
Work full time	22	36	14	19	10
Military service	15	17	14	36	18
Postsecondary education	2	11	8	43	36
Type of postsecondary education planned*					
Technical, vocational, or trade school	12	70	8	7	3
2-year college: tech/voc/trade program	6	54	20	15	6
2-year college: academic program	4	13	27	38	18
4-year college or university	2	2	4	49	44

*Includes those who will not continue their education immediately after high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 8a.—Percentage distribution of high school seniors, by sex and socioeconomic status (SES): 1992

Plans	Sex		Socioeconomic (SES) quartile			
	Male	Female	First (lowest)	Second	Third	Fourth (highest)
Total	51	49	21	25	26	28
Plans immediately after high school						
Work full time	55	45	35	31	23	11
Military service	84	16	30	32	23	15
Postsecondary education	47	53	15	22	28	35
Type of postsecondary education planned*						
Technical, vocational, or trade school	59	41	36	35	20	9
2-year college: tech/voc/trade program	52	48	31	33	26	11
2-year college: academic program	45	55	24	30	29	18
4-year college or university	49	51	13	20	28	39

*Includes those who will not continue their education immediately after high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 8b.—Percentage distribution of high school seniors, by parents' educational attainment and family composition in 8th grade: 1992

Plans	Parents' educational attainment (highest of mother and father)			Family composition in 8th grade		
	High school diploma or less	Less than 4-year degree	4-year degree or more	Both parents	One parent, one other guardian	Single parent or other
Total	29	41	30	68	13	18
Plans immediately after high school						
Work full time	44	43	13	62	19	19
Military service	37	47	16	57	18	25
Postsecondary education	23	41	36	72	12	17
Type of postsecondary education planned*						
Technical, vocational, or trade school	45	44	10	61	16	23
2-year college: tech/voc/trade program	44	44	11	61	19	20
2-year college: academic program	32	48	20	64	16	19
4-year college or university	20	39	41	73	11	17

*Includes those who will not continue their education immediately after high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 9.—Percentage distribution of high school seniors, by urbanicity and region: 1992

Plans	Urbanicity			Region			
	Urban	Suburban	Rural	Northeast	North Central	South	West
Total	28	41	31	20	25	35	20
Plans immediately after high school							
Work full time	23	38	39	15	27	35	22
Military service	24	36	40	17	25	41	18
Postsecondary education	30	42	28	22	26	33	19
Type of postsecondary education planned*							
Technical, vocational, or trade school	21	34	45	15	28	41	15
2-year college: tech/voc/trade program	21	43	36	14	28	37	21
2-year college: academic program	29	44	28	17	20	33	30
4-year college or university	31	41	28	23	27	34	16

*Includes those who will not continue their education immediately after high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 10a.—Percentage distribution of high school seniors, by high school program and 12th-grade test quartile: 1992

Plans	High school program				12th-grade test quartile			
	General	Academic	Voc/tech/ business	Other	First (lowest)	Second	Third	Fourth (highest)
Total	40	43	13	5	21	25	26	27
Plans immediately after high school								
Work full time	54	14	27	6	37	31	23	9
Military service	44	34	18	4	25	33	21	22
Postsecondary education	35	52	9	4	15	23	29	34
Type of postsecondary education planned*								
Technical, vocational, or trade school	52	11	30	7	40	36	18	6
2-year college: tech/voc/trade program	49	14	30	7	34	38	21	7
2-year college: academic program	53	30	12	6	29	32	27	12
4-year college or university	30	61	6	3	10	19	29	41

* Includes those who will not continue their education immediately after high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 10b.—Percentage distribution of high school seniors, by whether limited English proficient (LEP), grades in 8th grade, and high school type: 1992

Plans	LEP in 8th grade	Grades quartile (8th grade)				High school type	
		First	Second	Third	Fourth	Public	Private
Total	2	20	21	27	32	90	10
Plans immediately after high school							
Work full time	2	37	27	23	14	97	3
Military service	2	29	20	30	22	94	6
Postsecondary education	2	14	19	27	39	88	12
Type of postsecondary education planned*							
Technical, vocational, or trade school	3	39	29	23	9	97	3
2-year college: tech/voc/trade program	2	32	30	26	13	98	2
2-year college: academic program	3	27	26	27	19	92	8
4-year college or university	1	10	16	28	45	87	13

* Includes those who will not continue their education immediately after high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 10c.— Percentage distribution of high school seniors, by enrollment in selected school programs during their high school careers: 1992

Plans	Remedial math or English	ESL	Bilingual or bicultural class	Dropout prevention	No time in extracurriculars*	Advanced placement	Gifted
Total	28	8	29	2	33	35	18
Plans immediately after high school							
Work full time	47	9	21	3	56	17	9
Military service	31	9	27	4	37	27	20
Postsecondary education	22	7	31	2	25	42	21
Type of postsecondary education planned**							
Technical, vocational, or trade schoo	47	11	20	4	56	14	8
2-year college: tech/voc/trade program	43	9	21	4	49	14	8
2-year college: academic program	36	10	29	4	41	25	12
4-year college or university	17	6	33	1	21	49	25

* Senior year only.

** Includes those who will not continue their education immediately after high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 11.—Of high school seniors who planned to work full time rather than pursue further education immediately after high school, percentage who gave different reasons for this decision: 1992

Characteristics	Academic preparation	Financial	Social or cultural
Total	39	55	90
Student characteristics			
Sex			
Male	40	50	88
Female	37	61	91
Race–ethnicity			
Asian/Pacific Islander	39	44	98
Hispanic	45	64	87
Black, non-Hispanic	48	66	86
Amer. Indian/Native Al.	53	56	81
White, non-Hispanic	36	52	90
12th-grade test quartile			
First (lowest)	51	62	92
Second	38	59	85
Third	35	46	94
Fourth (highest)	24	57	94
High school program			
General	42	53	88
Academic/college prep	22	53	88
Vocational, technical, business	37	58	93
Other	36	59	88
LEP status in 8th grade			
LEP student	73	59	85
Not LEP student	36	54	89
Family characteristics			
Socioeconomic (SES) quartile			
First (lowest)	45	62	90
Second	37	56	92
Third	35	52	87
Fourth (highest)	28	35	86
Parents' educational attainment (highest of mother or father)			
High school or less	41	59	91
Less-than-4-year degree	36	55	89
4-year degree or more	27	34	86
Family composition in 8th grade			
Mother and father	39	50	92
One parent, one other guardian	31	53	85
Single parent or other	34	63	85

Table 11.—Of high school seniors who planned to work full time rather than pursue further education immediately after high school, percentage who gave different reasons for this decision: 1992—Continued

Characteristics	Academic preparation	Financial	Social or cultural
School characteristics			
Urbanicity			
Urban	37	54	88
Suburban	35	55	89
Rural	43	52	92
Region			
Northeast	39	51	92
North Central	37	58	93
South	38	54	86
West	42	51	92
Percent free-lunch recipients			
0–5	34	42	90
6–20	35	58	90
21–50	40	53	90
51–100	37	64	85

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 12.— Percentage of high school seniors who reported they had ever worked for pay and percentage distributions of high school seniors who worked during 1991–92, by number of hours worked per week and amount earned per hour: 1992

Characteristics	Ever worked for pay	Number of hours worked during 1991–92					Amount earned per hour during 1991–92		
		Did not work	1–10	11–20	21–35	36 or more	Less than $4.25	$4.25–$6.00	More than $6.00
Total	86	20	19	33	21	7	10	77	13
Student characteristics									
Plans immediately after high school									
Work full time	89	18	12	27	30	13	14	71	15
Military service	89	17	18	29	27	10	11	76	13
Postsecondary education	86	21	20	35	19	5	9	79	12
Type of postsecondary education planned*									
Technical, vocational, or trade school	86	21	12	31	27	9	13	76	11
2-year college: tech/voc/trade program	87	15	15	31	29	10	13	75	12
2-year college: academic program	85	18	14	32	27	8	9	78	12
4-year college or university	86	22	23	35	17	4	9	78	13
Sex									
Male	86	23	17	29	23	9	8	75	18
Female	85	18	21	37	20	5	12	79	9
Race–ethnicity									
Asian/Pacific Islander	76	24	22	30	18	6	8	76	16
Hispanic	77	21	13	30	27	9	9	79	12
Black, non-Hispanic	74	26	16	26	23	9	9	80	11
Amer. Indian/Native Al.	80	28	15	26	24	7	13	73	13
White, non-Hispanic	90	19	20	34	20	6	10	76	13
12th-grade test quartile									
First (lowest)	76	18	16	29	28	9	12	74	14
Second	86	18	17	34	24	7	11	76	12
Third	89	20	21	35	19	5	10	78	11
Fourth (highest)	90	26	25	34	13	2	9	78	13
High school program									
General	86	20	17	31	24	8	11	76	13
Academic/college prep	88	22	22	35	16	4	9	77	13
Voc., tech., business	86	15	12	33	31	9	11	76	13
Other	80	24	16	29	22	9	5	83	12
LEP status in 8th grade									
LEP student	73	34	13	24	20	9	13	71	16
Not LEP student	87	20	19	34	21	6	10	77	13

Table 12.— Percentage of high school seniors who reported they had ever worked for pay and percentage distributions of high school seniors who worked during 1991–92, by number of hours worked per week and amount earned per hour: 1992—Continued

Characteristics	Ever worked for pay	Number of hours worked during 1991–92					Amount earned per hour during 1991–92		
		Did not work	1–10	11–20	21–35	36 or more	Less than $4.25	$4.25–$6.00	More than $6.00
Family characteristics									
Socioeconomic (SES) quartile									
First (lowest)	79	23	15	28	26	10	13	77	10
Second	86	18	16	35	24	7	12	76	12
Third	88	17	18	36	22	6	9	80	12
Fourth (highest)	90	24	25	32	15	5	8	75	17
Parents' educational attainment (highest of mother or father)									
High school or less	83	20	14	33	26	8	12	77	11
Less-than-4-year degree	87	18	17	35	23	7	10	78	12
4-year degree or more	89	24	25	32	14	5	9	76	15
Family composition in 8th grade									
Mother and father	88	20	21	33	20	5	10	77	13
One parent, one other guardian	89	18	15	34	24	9	12	75	14
Single parent or other	83	21	14	35	22	8	11	78	12
School characteristics									
Urbanicity									
Urban	83	21	19	32	21	7	8	80	12
Suburban	88	19	18	37	21	5	8	77	16
Rural	86	21	20	31	20	7	15	76	10
Region									
Northeast	87	22	23	34	17	4	10	70	19
North Central	90	16	19	38	22	5	12	79	10
South	83	21	17	30	24	8	10	80	10
West	84	23	19	32	19	6	7	78	15
Percent free-lunch recipients									
0–5	89	21	22	33	18	5	8	74	18
6–20	89	17	18	37	21	6	10	79	11
21–50	85	21	17	33	22	7	11	79	10
51–100	80	25	15	29	22	10	13	75	11

* Includes those who will not continue their education immediately after high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up," 1992.

Table 13.—Percentage distribution of high school students ages 15–19, by employment status: October 1992

Characteristics	Working	Employed, not at work	Not working
Total	23	1	76
Sex			
Male	25	1	75
Female	22	1	78
Age			
15	11	0	89
16	24	1	75
17	32	1	67
18	36	1	63
19	26	1	73
Sex, by age			
Male, 15	11	0	89
Male, 16	24	1	75
Male, 17	33	1	66
Male, 18	38	1	61
Male, 19	35	2	63
Female, 15	10	0	90
Female, 16	24	1	76
Female, 17	32	0	68
Female, 18	33	1	67
Female, 19	14	0	86
Race–ethnicity			
Black	12	0	88
Hispanic	13	0	87
Other	14	0	86
White	28	1	71
Urbanicity of residence			
Central city	15	1	84
Balance of MSA/PMSA	25	1	74
Nonmetropolitan	26	1	74
Not identified	27	0	73

SOURCE: U.S. Department of Commerce, Bureau of Census, Current Population Survey, October 1992.

Table 14.— Percentage distribution of young adults ages 17–24, by enrollment status and educational attainment: October 1992

Characteristics	No high school diploma, not enrolled	Enrolled in high school	HS grad., not enrolled, no postsec. experience	HS grad., not enrolled, postsec. experience	Enrolled in voc/tech school	Enrolled in 2-year college	Enrolled in 4-year college or univ.
Total	12	15	24	17	2	9	22
Sex							
Male	12	17	24	16	2	8	21
Female	11	13	23	17	3	10	23
Age							
17	6	86	2	0	0	2	4
18	12	28	17	1	2	14	26
19	11	6	26	5	3	17	32
20	13	2	26	12	2	14	31
21	13	1	27	15	3	9	32
22	12	0	29	25	3	8	23
23	12	1	30	34	3	5	16
24	13	1	30	38	2	4	13
Sex, by age							
Male, 17	5	88	2	0	0	2	4
Male, 18	12	34	17	1	1	12	23
Male, 19	12	7	27	5	3	16	30
Male, 20	15	2	27	13	2	10	31
Male, 21	15	1	27	14	3	9	30
Male, 22	11	0	30	22	3	8	25
Male, 23	13	1	32	33	3	4	15
Male, 24	15	0	30	36	2	3	14
Female, 17	7	84	2	0	1	2	4
Female, 18	11	21	18	1	3	17	29
Female, 19	11	5	26	5	3	18	33
Female, 20	12	2	25	12	3	17	31
Female, 21	12	1	27	15	3	10	33
Female, 22	13	0	28	27	2	7	22
Female, 23	11	1	28	34	2	6	17
Female, 24	11	1	30	39	3	5	12
Race–ethnicity							
Black	14	19	29	12	3	7	15
Hispanic	31	16	22	9	2	10	10
Other	8	16	15	12	2	14	33
White	8	14	23	19	2	9	25
Urbanicity of residence							
Central city	15	13	22	17	3	9	22
Balance of MSA/PMSA	10	14	21	18	3	10	24
Nonmetropolitan	12	17	29	14	2	8	18
Not identifiable	10	15	25	18	3	8	22

SOURCE: U.S. Department of Commerce, Bureau of Census, Current Population Survey, October 1992.

Table 15.—Percentage of postsecondary students ages 17–24 who were working and not working while enrolled in different types of institutions: October 1992

Characteristics	Enrolled in any postsecondary		Enrolled in 2-year college		Enrolled in 4-year college or univ.		Enrolled in voc/tech school	
	Working	Not working	Working	Not working	Working	Not working	Working	Not working
Total	53	47	17	10	32	34	4	3
Sex								
Male	53	47	17	9	32	36	5	2
Female	53	47	18	10	32	33	4	4
Age								
17	33	67	17	12	14	50	1	5
18	42	58	20	13	20	42	2	3
19	51	49	23	10	25	37	3	3
20	54	46	18	11	33	33	2	2
21	55	45	14	7	36	35	4	3
22	57	43	15	7	36	33	5	4
23	62	38	14	8	41	26	7	4
24	67	34	13	8	44	23	10	3
Sex by age								
Male, 17	22	78	12	15	8	61	1	3
Male, 18	44	56	22	12	20	43	2	2
Male, 19	48	52	21	11	22	39	4	2
Male, 20	53	47	16	8	34	38	3	1
Male, 21	54	46	13	8	36	35	5	3
Male, 22	58	42	15	6	36	33	6	3
Male, 23	66	34	13	7	42	26	10	2
Male, 24	66	34	13	5	45	28	8	1
Female, 17	43	57	22	10	20	40	1	7
Female, 18	41	59	19	15	20	40	3	4
Female, 19	53	47	24	9	27	35	3	3
Female, 20	55	45	20	14	33	28	2	4
Female, 21	55	45	14	7	37	35	4	3
Female, 22	56	45	16	7	36	33	3	4
Female, 23	59	42	15	9	40	26	4	6
Female, 24	67	33	12	11	43	18	12	5
Race–ethnicity								
Black	37	63	13	15	20	40	4	8
Hispanic	55	45	25	19	24	22	6	4
Other	42	58	14	15	25	41	3	2
White	56	44	18	7	35	34	4	2
Urbanicity of residence								
Central city	49	51	15	11	31	36	4	4
Balance of MSA/PMSA	55	45	20	8	31	34	4	3
Nonmetropolitan	54	46	18	11	32	33	4	2
Not identifiable	56	45	15	9	36	33	5	3

SOURCE: U.S. Department of Commerce, Bureau of Census, Current Population Survey, October 1992.

Table 16.— Percentage distribution of high school completers ages 17–21, by primary activity: October 1992

Characteristics	2-year institution		4-year institution		Vocational institution		Not enrolled				
	Employed	Not employed	Employed	Not employed	Employed	Not employed	Work full time	Work part time	Employed, not at work	Unemployed	Not in labor force
Total	11	6	17	22	2	1	20	9	1	5	7
Sex											
Male	10	5	16	23	2	1	25	8	1	5	5
Female	12	7	18	21	2	1	16	10	1	4	9
Age											
17	14	9	11	40	1	0	6	5	1	5	9
18	14	9	14	29	2	1	11	8	1	4	7
19	14	6	16	23	2	1	19	9	0	5	6
20	10	6	19	18	1	1	23	10	1	5	7
21	7	4	19	18	2	1	27	9	1	4	8
Sex, by age											
Male, 17	10	10	7	47	1	0	6	4	0	3	12
Male, 18	15	8	14	29	1	1	14	8	1	5	5
Male, 19	13	7	14	24	2	0	22	9	0	5	4
Male, 20	8	4	18	20	1	1	27	9	1	5	6
Male, 21	7	4	18	18	2	1	33	7	1	6	4
Female, 17	18	8	14	34	1	0	6	5	1	7	6
Female, 18	14	11	14	30	2	1	8	9	1	3	8
Female, 19	15	6	17	22	2	2	15	9	0	4	8
Female, 20	12	8	19	16	1	2	18	11	1	4	7
Female, 21	7	4	19	18	2	1	21	12	2	3	12
Race–ethnicity											
Black	6	7	8	23	1	2	15	11	1	12	14
Hispanic	14	11	11	14	2	1	21	10	1	5	10
Other	10	13	15	34	2	1	9	7	1	6	4
White	12	5	19	22	2	1	22	9	1	3	5
Urbanicity of residence											
Central city	9	7	17	22	1	1	19	9	1	6	8
Balance of MSA/PMSA	14	6	18	24	2	1	19	7	1	4	5
Nonmetropolitan	10	6	15	18	2	1	24	10	1	5	9
Not identifiable	9	5	17	21	2	1	20	12	1	4	7

SOURCE: U.S. Department of Commerce, Bureau of Census, Current Population Survey, October 1992.

Table 17.— Percentage distribution of individuals ages 15–24 who were not enrolled in any school and who lacked a high school diploma or certificate, by primary activity: October 1992

Characteristics	Work full time	Work part time	Employed, not at work	Unemployed	Not in labor force
Total	31	15	1	15	38
Sex					
Male	47	18	1	15	19
Female	15	13	1	14	57
Age					
16	12	7	0	12	69
17	13	17	1	19	50
18	26	15	0	20	40
19	30	17	2	17	35
20	25	19	1	21	34
21	38	12	0	15	35
22	35	16	3	10	37
23	39	16	2	10	33
24	39	14	1	11	35
Sex, by age					
Male, 16	—	—	—	—	—
Male, 17	23	22	1	26	29
Male, 18	35	19	0	21	25
Male, 19	39	20	2	18	22
Male, 20	36	23	1	21	19
Male, 21	55	12	0	16	17
Male, 22	53	22	4	8	13
Male, 23	59	17	1	9	14
Male, 24	59	14	1	12	14
Female, 16	6	8	0	9	77
Female, 17	7	14	1	14	63
Female, 18	16	10	0	18	56
Female, 19	21	13	1	16	49
Female, 20	13	15	2	20	51
Female, 21	16	11	1	14	57
Female, 22	20	10	1	11	58
Female, 23	16	15	4	12	54
Female, 24	14	15	1	9	62
Race–ethnicity					
Black	14	11	1	22	52
Hispanic	39	14	0	12	34
Other	39	16	0	5	40
White	33	17	2	14	34
Urbanicity of residence					
Central city	30	13	0	16	42
Balance of MSA/PMSA	33	18	1	12	35
Nonmetropolitan	30	13	2	19	35
Not identifiable	33	18	1	11	37

— Too few cases for a reliable estimate.

NOTE: There were too few 15-year-olds to make reliable estimates for that age group.

SOURCE: U.S. Department of Commerce, Bureau of Census, Current Population Survey, October 1992.

Notes

1. Family and demographic characteristics of students are based on data collected in 1988 when students were in the eighth grade.
2. U.S. Department of Education, National Center for Education Statistics, *High School and Beyond 1980 Senior Cohort, Data File User's Manual* (Washington, DC).
3. U.S. Department of Education, National Center for Education Statistics, *Patterns and Trends of Delayed Entry into Postsecondary Education: 1972, 1980, and 1982 High School Graduates* (Washington, DC: 1990), 10.
4. U.S. Department of Education, National Center for Education Statistics, *National Education Longitudinal Study of 1988, Second Follow-Up, Data File User's Manual* (Washington DC: August 1993).
5. For the most recent data regarding high school dropout rates in the United States, see M. M. McMillen, P. Kaufman, E.G. Hausken, and D. Bradby, *Dropout Rates in the United States: 1992* (Washington, DC: U.S. Department of Education, National Center for Education Statistics, September 1993, NCES 93–464).
6. McMillen, Kaufman, Hausken, and Bradby, *Dropout Rates in the United States: 1992.*
7. *Ibid.*

7. Opportunities or Obstacles?
A Map of Federal Legislation Related to the School-to-Work Initiative

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The Need for a Map of Federal Programs

The Clinton administration's School-to-Work Opportunities proposal, recently introduced in Congress, represents growing recognition among policymakers, educators, and the business community that the United States requires a new system for educating adolescents for the future world of work.[1] The proposal envisions a new system of career-oriented education that will dramatically change the curricular experiences of students who do not pursue an academics-based, college-preparatory program in high school. If the School-to-Work Opportunities initiative succeeds, these students, whom various observers have termed the "forgotten half" because of the comparatively modest resources and expectations directed their way, will complete a sequence of challenging courses that integrate academic and vocational content, learn occupational skills through experience in the workplace, and be certified in a broad set of competencies relevant to clusters of relate occupations or industrial sectors.[*]

The School-to-Work Opportunities proposal would promote the construction of this visionary system by providing "venture capital" to state and local partnerships composed of schools, employers, labor organizations, parents, students, and community leaders. The venture capital will help these groups plan and implement a system of career-preparation paths to replace the fragmented high school program currently available to youths not bound for college. Proponents of the initiative take pains to distinguish the venture capital strategy from previous federal assistance programs designed to promote specific education and training policies. The bill emphasizes that the purpose of the venture capital is to catalyze and meld a coherent system of career-preparation programs and services that draws upon and can be maintained by other federal, state, and local resources. Although the extent to which this approach differs from other efforts that use federal seed money is debatable, it is clear the administration intends for states and localities to use whatever programmatic resources exist or can be made available to "create a single school-to-work system that brings together programs and services now driven by funding streams and bureaucratic jurisdictions rather than the needs of students, schools, or employers."[2]

The array of federal programs that provide educational assistance, job training, and welfare forms a significant part of the pool of resources already available at state and local levels. Their inclusion in a new system of career preparation for high school students is foreshadowed, if not foreordained, by the proposed waiver authority contained in the School-to-Work Opportunities bill. Waiving certain statutory and regulatory program requirements, a U.S. Department of Education and U.S. Department of Labor Legislative Fact Sheet points out, will "allow other federal funds to be coordinated with comprehensive School-to-Work programs."[3] We assume the type of coordination the proponents of this legislation anticipate is what W. Norton Grubb and his colleagues call "collaborative service delivery" as distinguished from "collaborative planning."[4] Collaborative service delivery involves much more than preventing duplication of services through articulation agreements, the sharing of board members, or the seeking of advice or comments for inclusion in state plans; it also seeks to bring about more effective programs through *the coordinated use of resources.*

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[*] Most parties agree there is strong reason to design these school-to-work paths in ways that appeal broadly to *all* students, even if the intended beneficiaries are those who do not pursue a college preparatory course sequence in high school. Programs for the noncollege bound too easily become redefined as undemanding programs for students with low ability.

To do so, it is important first to identify relevant programs and assess where there are possibilities to draw upon resources and where there are constraints. This paper attempts to map *federal* legislation relevant to the School-to-Work Opportunities initiative. Similar efforts focused on state programs are likely to prove fruitful, although the complexity of looking across the mix of programs in the 50 states is truly sobering.[5] Nevertheless, the fact that federal resources are often dwarfed by state and local sources of support should always be kept in mind, particularly with respect to the long-term institutionalization of the envisioned system.*

We hope the map of federal programs presented in this paper, although not comprehensive of all programs that may prove relevant, will help readers arrive at some initial determinations about such questions as: Where is there leverage in other federal programs for creating the new system of career preparation? Alternatively, which programs are least likely to offer support or are only tangentially useful as a resource? Which programs impose requirements that must be addressed in the design of the system?

The contents of the map are addressed in this chapter and appendix. An overview is provided of the selected federal programs from two perspectives: how the programs compare across key features, and how they relate to the major elements of a revamped system of career preparation; and the general lessons that emerge from considering the set of federal programs included in the map. The appendix profiles each program's operational features and the implications of each program for the School-to-Work Opportunities initiative. Readers should consult it selectively, as individuals' familiarity with the details of different programs will vary. We include these details in the appendix as a direct outgrowth of our experience in developing this map; namely, there was no one source that compiled information about each federal program through the lens of the School-to-Work Opportunities initiative.

Approach to Mapping Relevant Federal Programs

Two key questions shaped the development of this map: Which federal programs should be considered and ultimately included in the map and what information about the programs should form the basis for identifying the contribution to or influence of the program on the system of career preparation envisioned in the administration's proposed legislation? From the outset we concluded the answers to these questions would be based on our own and others' informed judgments. Although a growing body of literature documents the ways in which similar school-to-work efforts have incorporated other federal program resources (or failed at efforts to collaborate), this information is limited to a few cases and typically does not address more than a few federal programs. Also important to our initial planning was the realization that no two maps of qualitative information are likely to contain identical elements, nor are they likely to assume the same perspective. For this reason, it is important to clarify how we developed this map.

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*It would be a misreading of this paper to conclude that the intent of the School-to-Work Opportunities proposal is to build the envisioned system *primarily* from existing federal programs. This map addresses only federal programs because it was important to start somewhere, and there was a need to address programs at the federal level. Whether a system can be viewed as institutionalized when it is even partially dependent on continual support from federal programs is a question worth raising. If the answer is positive, it will mark a new federal interpretation of the concept of institutionalization.

Federal Programs Included in the Map

The major factor used to select federal programs for the map was a program's role in providing (or shaping) services or supporting other elements needed in a system of career preparation for youth between the ages of 14 and 21. Examples of what we mean by other necessary elements include a cadre of appropriately trained teachers, the availability of guidance counselors with career or occupational expertise, integrated academic and vocational curricula, know-how in developing structured learning situations in the workplace, staff who coordinate work-based learning opportunities, a supply of employer-based mentors, information about job openings, and student financial support. We relied on one additional characteristic to select federal programs for the map: the eligibility and participation of youth who were attending secondary or postsecondary school. If a program was restricted only to youth or young adults who were not enrolled in school, we omitted it from the map.* Using these criteria, we included the following 20 federal programs or statutory mandates in the map:

- Job Training Partnership Act (JTPA) Youth Training Program
- JTPA Summer Youth Employment and Training Program
- JTPA State Education-Coordination Set-Aside Program
- JTPA Youth Fair Chance Program
- National Apprenticeship Act
- U.S. Employment Service Program (Wagner-Peyser Act)
- Fair Labor Standards Act (Minimum Wage and Child Labor Requirements)
- Perkins Basic State Grants Program
- Perkins Tech-Prep Education Act
- College Work-Study Program
- Goals 2000: Educate America Act (pending Congressional approval)
- Federal Pell Grants and Guaranteed Student Loans
- Chapter 1 Elementary and Secondary Education Act (ESEA) Basic Grants Program

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*This decision had some clear drawbacks, not the least of which is language in the School-to-Work Opportunities bill that calls for state and local grant applicants to address the needs of youth who have dropped out of school. Some programs were difficult to classify and the decision of whether to include them was not always clear-cut. For example, the welfare-to-work JOBS program places priority on serving out-of-school youth but can provide services to youth who return to school, and in some unspecified number of instances, youth who remain in school. We included JOBS in the map, but we did not include programs funded as part of the Adult Education Act (including Even Start), for which in-school youth are ineligible for services. Using eligibility of in-school youth as a criterion for program selection emerged from discussions with several experts who persuasively made the case that the primary thrust of the School-to-Work Opportunities initiative was to reconstruct the high school and post-high school experience of students.

- Chapter 2 ESEA
- Eisenhower Mathematics and Science State Grants Program
- Individuals with Disabilities Education Act (IDEA) State Grants
- Vocational Rehabilitation State-Federal Grants Program
- Section 504 of the Rehabilitation Act
- Americans with Disabilities Act
- Job Opportunities and Basic Skills Training Program (JOBS)

Inevitably, limitations on resources prevent addressing all programs with potential relevance. For example, we did not include in our review two programs listed in the proposed legislation as within the Secretary of Education's waiver authority—the Drug Free Schools and Communities Program, and the Emergency Immigrant Education Program. We also did not include the Food Stamp Employment and Training Program, which attempts to enable food stamp recipients to achieve self-sufficiency. Participants in this program typically receive very low-intensity services such as job search assistance; a few receive workfare, work experience, or skills training. But since most participants tend to be older than the school-to-work target population and the funds spent on each participant average only about $150, we did not profile this program in the map. Also missing from the map for similar reasons are the federal Cooperative Education program that in FY 1993 provided about $14 million in competitive grant funds to postsecondary institutions to establish or expand cooperative education programs, and the $20 million Targeted Jobs Tax Credit (TJTC) that has allowed employers tax credits for specific types of workers.[6] Generally speaking, these omitted programs are modest in terms of levels of support and have less direct relevance to the School-to-Work Opportunities initiative than other programs in the map.

Key Aspects of Programs Emphasized in the Map

The central question posed for each program included in the map is what difference the program will make in establishing the type of collaborative service delivery envisioned for a new system of career preparation that spans the school and the workplace. To answer this question we reviewed each program for its capacity to contribute or influence any of five major elements that will define the new system of school-to-work preparation. The following sections briefly highlight activities associated with the five major elements and that the federal programs may contribute to or affect.

- ***Coordination and Articulation.*** The creation of School-to-Work Opportunities systems based on collaborative service delivery will require considerable staff time and energy if they are to establish effective links between different educational levels, between the school and work sectors, and across programs. They will have to initiate contacts, develop partnerships, follow up on plans and agreements, resolve barriers, coordinate schedules and paperwork, and cajole a diverse group of individuals who serve different organizational masters to work together. Policymakers and the public often diminish the importance of these tasks by viewing them as administrative rather than integral to the delivery of service.

- ***Structured Work-Based Learning Opportunities.*** There are many challenges that surround the realization of true learning opportunities in the workplace.[7] Getting employers to participate in school-to-work programs, keeping them involved, identifying appropriate supervisory and instructional staff in places of work, providing pay for the work performed, and ensuring the work experience involves learning as well as exposure to the workplace are all critical to the School-to-Work Opportunities vision.[*]

- *Creation of School–Workplace Infrastructure*. A massive challenge lies ahead with respect to the infrastructure required by a new system of career preparation for the nation's youth. Teachers and instructors will need to master teaching methods that emphasize the solution of real problems and blend academic knowledge with occupational skills. Guidance counselors will need to develop expertise in career advisement and in obtaining quality information about postsecondary or private sector opportunities for high school students. Curriculum development efforts that integrate the academic and vocational spheres and foster collaborative teaching will need to occur on a broader scale. Schools will need to arrange for coordinators of workplace learning placements and acquire state-of-the-art equipment and facilities to enable students to develop technological skills applicable to the future workplace.

- *Certification and Placement*. Mechanisms must be established and professional staff time devoted to developing a consensus around industry-based, occupational skills standards and appropriate ways to assess students' mastery of these skills. Efforts that integrate local, state, and federally developed standards will need to resolve the questions of narrowness versus breadth as well as ways to provide participating students with opportunities to acquire the credits necessary for access to additional higher education. Staff and up-to-date information will be required to link students with placements in their chosen career paths.

- *Student Participation and Access*. School-to-work reforms must provide for the broad participation of all youth, including those who have been historically defined as at risk, at the same time as they strive to offer demanding curricula and hold students accountable for proficiency in core academic subjects. Schools will have to become much more effective in instructing students who come from disadvantaged backgrounds or possess disabilities if they are to achieve these dual goals. A key ingredient for many at-risk students will be the provision of supportive services such as child care, transportation, personal counseling, and case management. Necessary services of a more instructional cast are those that provide academic tutoring, additional time in the summer or after school to acquire proficiency in core subjects and fulfill requirements, and access to courses that incorporate mathematical and scientific concepts as well as higher order skills.

We used two lenses to assess each program's relevance to these five major elements: the key features of the program as defined by statute and regulation and the patterns that have marked a program's implementation at state and local levels. The latter perspective is critical in our perspective for a program is much more than a set of legal provisions; it is an accumulated set of understandings and practices. Legal provisions may allow for program resources to be redirected or for key terms to be reinterpreted, but actually redirecting resources or changing the meaning others attach to these provisions can become an almost insurmountable obstacle once practices are ingrained.*

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[*] Universal agreement does not exist about the wisdom of requiring students to engage in structured learning in the workplace. Since there may be serious limits on organizing such program components for a large number of students, many observers support the concept of simulated work experience that takes place apart from the workplace. We note this debate, but add that, for purposes of this exercise, we have assumed the system requirements as put forth in the supporting materials for the administration's proposed School-to-Work Opportunities Act.

Lessons Across the Federal Programs

In this section, we examine the federal programs with a broad brush and discuss overarching themes and lessons. The section is divided into two parts. The first part presents a table of key features of the federal programs and a matrix that links the 20 programs with the five critical elements of the School-to-Work Opportunities vision outlined in the previous section. The second part goes a level deeper to draw key lessons from the federal legislative map. There, we look across programs for common themes and examine the potential and the constraints the programs may present to states and localities as they create paths for School-to-Work Opportunities.

Federal Programs: Key Features and Links to School-to-Work Opportunities

One useful approach to understanding the 20 programs is to consider their key features. For ease of understanding, we have presented these features in table 1. The table clearly shows the diversity of the programs we examined. For instance, some programs provide limited or no federal funds; others, such as JTPA, Perkins, Chapter 1, Pell Grants, and Guaranteed Student Loans, are among the largest federal education and job training programs in existence. Similar diversity is evident in the discretion the programs give to states and localities over funding streams and in the programs' target populations, although, as discussed below, disadvantaged youth and youth with disabilities are most frequently the groups to whom these programs are targeted.

Another useful approach to viewing the federal programs is to consider how they relate to the elements of School-to-Work Opportunities systems described in the previous chapter. This approach provides additional details about the potential uses of the 20 programs. Table 2 arrays the 20 federal programs against the elements of systems of career preparation as defined by the School-to-Work Opportunities bill to indicate where each program is likely to have relevance. The key elements of School-to-Work Opportunities systems, which are listed across the top of the matrix, were described in the previous section.

Our determination of the relevance of each program for School-to-Work Opportunities was based on the *potential* of each program to contribute to the Clinton administration's vision. Hence the table addresses the question of how states and localities *could* make use of the programs based on the governing legislation; it does not incorporate pertinent information about how states and localities have actually implemented the programs. As a result, some programs are considered as contributing to various elements even though states and localities are not presently using the programs to advance School-to-Work Opportunities efforts. For instance, the federal Chapter 1, Chapter 2, and Eisenhower Mathematics and Science programs hold promise for improving the core academic skills of high school students in school-to-work programs; however, as currently implemented at the state and local levels, these programs are not primarily directed toward these students.

For programs that impose requirements or that do not provide federal grant funds (marked with asterisks in the matrix), we determined relevance in a different way: We considered aspects of School-to-Work Opportunities systems likely to be affected by these laws. For example, the paid work experience component of school-to-work programs must comply with the Fair Labor Standards Act and Americans with Disabilities Act.[8]

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*Sources for assessing each program included the authorizing statute, budget documents, evaluation reports, and a variety of program documents. We also consulted relevant research reports and consulted with individuals who had expertise on specific programs or general issues. Our extant sources appear in the references.

Based on the matrix of programs, we conclude that many federal programs, as authorized, appear to have the potential to foster students' participation in the types of career preparation paths envisioned in the administration's proposal. However, as the following discussion on lessons gleaned from the legislative map indicates, a number of factors are likely to reduce the extent to which this potential will be realized.

Key Lessons From the Federal Legislative Map

As we examined the potential role of the federal programs in School-to-Work Opportunities systems, six major lessons emerged. We discuss these below. Interested readers should turn to the appendix for details about specific programs and an analysis of each program's implications for School-to-Work Opportunities initiatives.

- Federal programs offer opportunities for states and localities to obtain additional resources to bolster their School-to-Work Opportunities initiatives, but other claims on these federal program funds are likely to dampen their impact on the envisioned system of career preparation significantly.

Consistent with the language in the bill and many supporting materials, many states and localities charged with creating new career pathways consistent with the Clinton administration's vision will look to federal programs for resources to help build and sustain the system. Three federal programs stand out for their potential to fund a range of services that are integral to School-to-Work Opportunities systems: JTPA, Perkins Basic Grants, and Tech-Prep. Several other programs—such as Chapter 1, Chapter 2, Eisenhower Mathematics and Science, Vocational Rehabilitation (VR) Basic State Grants, and the student financial aid programs—offer potential resources for states and localities to use to support more specific components of the envisioned school-to-work system.

While many of the federal programs demonstrate the potential to bolster School-to-Work Opportunities initiatives, they also tend to serve a range of other competing purposes. As a result, many of the programs are likely to play a far smaller role in the initiatives begun under School-to-Work Opportunities than the above discussion might indicate. In fact, the contribution of the federal programs to School-to-Work Opportunities systems is likely to be mitigated by targeting and eligibility requirements, divergent program missions and cultures, state and local discretion, and limited funds.

Since some federal programs have the potential to bolster various elements of the envisioned school-to-work system, one might reasonably ask whether the School-to-Work Opportunities initiative duplicates other federal programs. Based on the programs we examined, our opinion on this point is mixed. Clearly, there are federal programs that can (and sometimes do) provide services consistent with the Clinton administration's vision of improved career preparation paths. For example, the Tech-Prep program funds a career preparation system that is closely aligned with the proposed School-to-Work Opportunities initiative.* Yet, given the many competing claims on federal resources, it appears unlikely that the envisioned system of school-to-work pathways would emerge from these federal programs without some major external impetus.

- The potential role of many federal programs in School-to-Work Opportunities initiatives will be constrained by requirements that target federal funds to disadvantaged youth and youth with disabilities.

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*The law leaves the states and local consortia free to decide about the role of work-based learning. Although some projects have pursued this course, it does not appear that the Tech-Prep program in most states has emphasized work-based learning and paid work experience, two key components of the Clinton administration's bill.

A major thrust of federal policy has been to provide compensatory services to economically and educationally disadvantaged students and students with disabilities, and targeting requirements based on economic, educational, or disability status are a key feature of many federal programs in this map: JTPA, Perkins Basic Grants, Chapter 1, IDEA, VR Basic State Grants, JOBS, College Work-Study, Pell Grants, Guaranteed Student Loans, and to a lesser extent Chapter 2 and the Eisenhower Mathematics and Science program. Further, several of these programs require most or all *individuals* served to meet federally specified income- or disability-based eligibility requirements.*

Thus, schools and districts with high concentrations of poverty (and students with disabilities) will be able to bring more federal resources to bear on improved school-to-work pathways. In communities where most students are eligible for these federal programs, federal funds may serve as the backbone of school-to-work programs.** Federal resources could be especially important in these communities if private resources—from employers, for example—are not forthcoming.

In better-off communities, fewer federal resources will be available, and many young people participating in the envisioned school-to-work systems will not be eligible for federal support. In these areas, communities may seek to use federal funds to supplement other school-to-work services eligible youth receive. For example, a school-to-work program might use JTPA funds to provide extra counseling or basic skills training to federally eligible disadvantaged youth.

- The divergent missions and cultures that have become attached to federal programs are likely to hinder state and local efforts to leverage other federal resources on the School-to-Work Opportunities initiative.

Apart from their focus on disadvantaged youth and youth with disabilities, many of the programs covered in this map have missions and cultures that have evolved over time, differ remarkably from each other, and in some cases are incongruent with School-to-Work Opportunities. Often, redirecting federal resources toward School-to-Work Opportunities systems would require a dramatic and politically difficult change in program priorities. For instance, state and local implementers of the Chapter 1 program have concentrated funds on compensatory education in elementary schools; although serving older students is consistent with the authorizing legislation, such a change would be difficult.[9]

In other cases, the authorizing legislation may create a program mission that is partly incongruent with the School-to-Work Opportunities initiative. For example, the U.S. Employment Service, created under the Wagner-Peyser Act, provides job search services to registered job seekers; in addition, it ensures participants in federal benefit programs are actively seeking employment. This enforcement aspect of the U.S. Employment Service may be inconsistent with efforts to redirect the service to focus more strongly on the needs of youth in school-to-work programs. Even the Goals 2000 bill, which would fund state and local systemic reform and is intentionally consistent with the School-to-Work Opportunities legislation, seems unlikely on its own to generate significant change in school-to-work paths, largely because its goals and mission encompass much more than reform of school-to-work career pathways.*

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*JTPA (Titles II–B and II–C and the Education-Coordination Set-Aside), IDEA, VR Basic State Grants, JOBS, College-Work Study, Pell Grants, Guaranteed Student Loans, and Chapter 1 have individual-level eligibility requirements.

**Not every student in a school or district would have to be eligible for these programs for the programs to play a role in the envisioned school-to-work systems. As we mentioned above, some programs do not include individual-level eligibility requirements. For example, the JTPA Youth Fair Chance program provides grants to high poverty communities but does not have individual income eligibility requirements. Other programs—like JTPA Title II–C—allow a small fraction of funds to go to individuals who do not meet the eligibility requirements.

The flip side of this discussion is, all else being equal, programs whose missions and cultures are closely aligned with the School-to-Work Opportunities initiative will be more likely to reinforce school-to-work efforts. For instance, JTPA's mission includes providing education and training services to help youths successfully make the transition to employment; thus it is not surprising that some JTPA programs have found ways to collaborate with high schools (and vice versa) to provide support services and employability skills training to at-risk youth. On the other hand, JTPA tends to provide short-term services that are inconsistent with the longer term emphasis of School-to-Work Opportunities and may prove a barrier to involving JTPA in school-to-work efforts.

- The level of state and local discretion over program funds is likely to influence the extent and nature of collaborative efforts under the School-to-Work Opportunities initiative.

In many of the programs we examined, states have less discretion than localities over federal funds. Thus, states that decide to take the lead in forging School-to-Work Opportunities programs may have to adopt creative approaches to encourage localities to bring federal resources to bear on the envisioned school-to-work system. For example, states might provide technical assistance to localities that use federal funds for school-to-work efforts, or states making grants for innovative school-to-work programs might give preference to local efforts that leverage funds from federal programs.

Where states opt to let localities direct the development of School-to-Work Opportunities systems, local efforts to marshall resources from federal programs are likely to benefit from the extent of local discretion permitted by many federal programs. For example, in 1990 W. Norton Grubb and his colleagues were able to locate a number of instances of coordination in service delivery among local JTPA programs and vocational education providers—made possible largely because localities can exercise significant control over JTPA funds and services.[10]

Whether the school-to-work system is driven primarily by states or localities, the extent of collaboration and coordination across federal programs will depend on many factors, including state and local politics and the relations among program operators. For instance, Grubb and his colleagues also found examples of local JTPA programs that were restricted in their ability to coordinate with vocational education providers because they faced political pressures to direct funds to specific groups and service providers.[11] Nevertheless, one should not underestimate the entrepreneurial spirit at all levels of government and the efforts policymakers and program operators will make to secure additional funding sources.

- Limited federal resources will curtail the role of various federal programs in School-to-Work Opportunities initiatives.

Limited resources can influence the role of the federal programs in School-to-Work Opportunities systems. First, for programs closely aligned with the proposed initiative, limited funding becomes the primary constraint to using these programs to expand School-to-Work Opportunities systems. An excellent example of this is the Tech-Prep program, which has a funding level of only

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*Some aspects of the Goals 2000 bill are closely aligned with the mission of the School-to-Work Opportunities initiative—most notably, the bill's provision to create a National Skill Standards Board to stimulate the development of a voluntary national system of skill standards and certification. This provision is one area in which Goals 2000 appears likely to make a direct contribution to School-to-Work Opportunities initiatives.

$100 million.[*] Of course, federal funding for school-to-work and vocational education programs is often dwarfed by other public and private sources, and even limited federal funds can play an important role as seed money.

For federal programs whose missions and patterns of implementation are less clearly aligned with the goals of the School-to-Work Opportunities bill, limited funding will have a different influence. For these programs—such as Chapter 1 and the Employment Service—redirecting federal funds to school-to-work programs involves making an explicit trade-off in program services as program administrators de-emphasize more traditional program roles. These trade-offs would be less difficult if resources were expanded; however, current fiscal constraints reduce the likelihood of significant new federal funding for these programs.

Programs that provide limited resources also can be program models for states and localities. For instance, the registered apprenticeships authorized by the National Apprenticeship Act share many common elements with the Clinton administration's proposal, including structured, work-based training and occupational skill standards and certification, although they serve an older population than School-to-Work Opportunities programs. States and localities may seek to draw upon the experiences of this program as they prepare to develop improved career pathways for all youth. In addition, states can create school-to-apprenticeship programs that prepare students to participate in registered apprenticeships.

Finally, some federal programs have nonsupplant requirements, matching requirements, and performance standards linked to program funding. These additional requirements will constrain states and localities seeking to draw resources from these programs. For example, programs for the disadvantaged and disabled (like Chapter 1, Chapter 2, Perkins II, IDEA, and VR) often require states and localities using these funds to ensure they supplement, not supplant, other funds. Another example is JTPA's Youth Training Program (Title II–C), which includes performance standards linked to program funding. Because of the performance standards, some JTPA programs may be reluctant to provide long-term training to youth in School-to-Work Opportunities systems if they believe such a change in their service strategy would reduce their ability to demonstrate success on the performance standards.

- Federal laws that aim to protect the basic rights of employees and persons with disabilities will prove important to shaping state and local implementation of School-to-Work Opportunities initiatives.

Several federal programs or laws we examined provide limited or no federal resources; these laws can nonetheless influence School-to-Work Opportunities systems. School-to-work systems must comply with the three federal laws we examined that aim to protect the basic rights of employees and persons with disabilities: the Fair Labor Standards Act (FLSA), the Americans with Disabilities Act (ADA), and Section 504 of the Rehabilitation Act. The FLSA includes minimum wage and child labor provisions that programs providing work experience or on-the-job training must satisfy. Our preliminary assessment of the FLSA, however, is while it will affect key features of school-to-work programs like wages and occupations, the law will generally not prove an insurmountable barrier to the creation of school-to-work programs. In addition, the FLSA provides exemptions for apprentices and student learners that may reduce its effect on some students in these programs. Although state laws are beyond the purview of this report, states have additional child labor laws, and in each state

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[*] This has led some observers to suggest that increasing Tech-Prep funding might be a more direct approach to expanding career pathways for noncollege-bound youth than expending funds through the School-to-Work Opportunities bill. Of course, as mentioned earlier, while Tech-Prep is generally consistent with the administration's proposal, as currently implemented it does not require paid work experience or work-based learning as a condition of eligibility for funding.

Table 1.—Key features of federal programs relevant to the School-to-Work Opportunities initiative

							Discretion over use of funds		
Federal program	Federal agency	Target group	Approximate funding level[1]	State control of funds allocations	State agency in charge	Eligibility restrictions are placed on:	State	Local	Scope of allowable uses
JTPA—Title II-C: Youth Training	DOL	Disadvantaged youth (14–21)	$680 million	None	Executive agency determined by governor; state job training coordinating council oversight	Individuals	Limited	Considerable	Broad
JTPA—Title II-B: Summer Youth Employment	DOL	Disadvantaged youth (14-21)	$1 billion	None	Executive agency determined by governor; state job training coordinating council oversight	Individuals	Limited	Considerable	Moderate
JTPA—Education–Coordination Set Aside (8% set aside)	DOL	Disadvantaged youth and adults	8% of Titles II-A and II-C	Considerable	Executive agency determined by governor; state job training coordinating council oversight	Individuals	Considerable	Limited	Moderate
JTPA—Youth Fair Chance Program	DOL	Youth and adults in high poverty areas (14-30)	$50 million	None (federal discretionary grants)	Executive agency determined by governor; state job training coordinating council oversight	Communities	Limited	Considerable	Moderate
National Apprenticeship Act	DOL	Out-of-school adult workers	Apprenticeship support is mostly private	—	State Apprenticeship Agency (in 27 states)	Employers, individuals	—	—	—
U.S. Employment Service (Wagner-Peyser Act)	DOL	Employers and job seekers	$900 million	Moderate	State Employment Offices	—	Considerable	Limited	Moderate
Fair Labor Standards Act	DOL	Employees, including youth	No funds involved	—	—	—	—	—	—
Perkins Basic State Grants	ED	Schools and programs serving disadvantaged students	<$1 billion	Limited	State Board of Voc. Ed	LEAs; post-secondary schools	Modest	Considerable	Broad
Perkins: Tech-Prep Education Act	ED	Education consortia/high school and postsecondary students	>$100 million	Considerable	State Board of Voc. Ed	—	Considerable	Considerable	Broad
College Work-Study	ED	Financially needy postsecondary students	$600 million	None	None	Individuals; postsecondary schools	Limited	Moderate	Moderate

the more restrictive law applies. To comply with the ADA and Section 504, which protect the rights of persons with disabilities, all high school and postsecondary preparation paths involving school-based and work-based components will need to ensure accessibility to and accommodations for students with disabilities. Measures such as modifying jobs for work-based education and instituting alternative modes of student assessment will be critical to the full inclusion of youth with disabilities into the new systems of education.

Summary

In this paper, we reviewed 20 federal programs for their capacity to contribute to or influence state and local implementation of the Clinton administration's School-to-Work Opportunities initiative. Many programs, as authorized, appear to have the potential to influence students' participation in the types of career preparation paths envisioned in the administration's proposal. Several programs—most notably, JTPA, Perkins Basic Grants, and Perkins Tech Prep—appear to have the most significant potential for supporting a broad range of School-to-Work Opportunities activities. School-to-work efforts must also comply with the three federal laws we examined that protect the rights of employees and persons with disabilities: FLSA, ADA, and Section 504 of the Rehabilitation Act.

Other federal programs—Chapter 1, Chapter 2, Eisenhower Mathematics and Science, Pell Grants, Guaranteed Student Loans, IDEA, VR Basic Grants, Goals 2000, the U.S. Employment Service, and JOBS—can help bolster certain specific aspects of the administration's proposal. But in light of such factors as narrow targeting requirements, divergent program missions and cultures, competing state and local discretion over program funds, and limited funding, translating these programs' potential into reality may prove a demanding task.

State and local planners will encounter both opportunities and obstacles in using other federal programs to help develop and sustain the vision of school-to-work preparation proposed by the Clinton administration. The proposed waiving of some federal requirements may remove some obstacles, but the list of areas excluded from the waiver authority in the bill (for example, targeting of funds and eligibility rules) indicates many barriers to achieving collaborative service delivery on a large scale will remain. Nevertheless, the history of federal programs contains many examples of how programs evolve when state and local forces coalesce around a vision of change. State and local school-to-work planners can take heart from this observation as they pursue existing and prospective opportunities in federal programs.

Note

Table 1 is an overview of the following features of the 20 programs: responsible federal and state agency, funding level, target group and eligibility requirements, scope of allowable services, and control of funds. Several column headings in the table require further explanation. The "State control of funds allocation" column refers to the extent to which states can influence the distribution of federal funds to localities.* In contrast, the "Discretion over use of funds" refers to who decides program directions. It describes the relative influence of states and localities over such questions as the types of services provided or clients served. Note many of the programs offer considerable discretion at the local level. "Scope of allowable uses" is the extent to which the law circumscribes the allowable uses of program funds.

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*Many federal programs provide funds to localities via state agencies. Sometimes, states can control the allocation of these funds to localities; other times, states must distribute funds according to a federally specified formula.

Table 1.—Key features of federal programs relevant to the School-to-Work Opportunities initiative—Continued

							Discretion over use of funds		
Federal program	Federal agency	Target group	Approximate funding level[1]	State control of funds allocations	State agency in charge	Eligibility restrictions are placed on:	State	Local	Scope of allowable uses
Goals 2000 (pending)	ED	School districts and schools	(Authorization FY 1994, $400 million)	Considerable	State Education Agency	—	Considerable	Considerable	Broad
Pell Grants and Guaranteed Student Loans	ED	Financially needy postsecondary students	Approx. $24 billion in aid available	None	—	Individuals; postsecondary schools	Limited	Limited	Moderate
Chapter 1 ESEA	ED	Disadvantaged schools and students	$6.2 billion	None	State Education Agency	Schools; individuals	Moderate, varies by state	Considerable	Moderate
Chapter 2 ESEA	ED	School districts and schools	$450 million	Limited	State Education Agency	—	Limited	Considerable	Very broad
Eisenhower Mathematics and Science	ED	School districts and colleges	$250 million	Limited	State Education Agency	—	Moderate	Considerable	Broad
IDEA Basic Grants (Part B)	ED	School districts and students with disabilities	>$2 billion	None	State Education Agency	Individuals; schools	Limited	Considerable	Moderate
Vocational Rehabilitation State–Federal Grants	ED	Adolescents and adults with disabilities	<$2 billion	Considerable	State VR Agency(ies)	Individuals	Considerable	Varies by state	Broad
Rehabilitation Act Section 504	ED	Recipients of federal funds	No funds involved	—	—	Individuals	—	—	—
ADA	ED/ Justice/ EEOC	Public and private institutions	No funds involved	—	—	Individuals	—	—	—
JOBS	HHS	Welfare recipients	$1 billion	Considerable	State Welfare Agency	Individuals	Considerable	Limited	Moderate

[1] In most instances, estimates of funding are based on FY 1993; these are rounded to provide a broad basis for making comparisons across programs.

Table 2.— Federal programs potential contributions and influence across major elements of School-to-Work Opportunities reforms

	Coordination and articulation			Structured work-based learning opportunities			School-workplace infrastructure creation			Certification and placement		Student participation and access		
Federal program	Across programs	Education and workplace	Secondary and post-secondary education	Employer incentives to participate	Paid work experience	Structured work-based instruction	Teacher, mentor, counselor training	Curriculum development	Equipment	Develop skill standards	Job placement and information	Post-secondary financial aid	Core subject competence	Support service
JTPA—Title II-C: Youth Training	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
JTPA—Title II-B: Summer Youth Employment	✓	✓		✓	✓						✓		✓	✓
JTPA—Education-Coordination Set Aside (8% set aside)	✓	✓	✓			✓	✓	✓					✓	
JTPA—Youth Fair Chance Program	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	✓
National Apprenticeship Act*		✓		✓	✓	✓	✓	✓		✓	✓			
U.S. Employment Service (Wagner-Peyser Act)											✓			✓
Fair Labor Standards Act*				✓	✓	✓								
Perkins Basic State Grants	✓	✓	✓	✓		✓	✓	✓	✓		✓		✓	✓
Perkins: Tech-Prep Education Act	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓
College Work-Study		✓		✓	✓							✓		

Table 2.— Federal programs potential contributions and influence across major elements of School-to-Work Opportunities reforms—Continued

	Coordination and articulation			Structured work-based learning opportunities			School-workplace infrastructure creation			Certification and placement		Student participation and access		
Federal program	Across programs	Education and workplace	Secondary and post-secondary education	Employer incentives to participate	Paid work experience	Structured work-based instruction	Teacher, mentor, counselor training	Curriculum development	Equipment	Develop skill standards	Job placement and information	Post-secondary financial aid	Core subject competence	Support service
Goals 2000 (pending)	✓	✓				✓	✓	✓	✓	✓			✓	
Pell Grants and Guaranteed Student Loans												✓		
Chapter 1 ESEA							✓	✓					✓	✓
Chapter 2 ESEA							✓	✓	✓				✓	
Eisenhower Mathematics and Science		✓	✓				✓	✓	✓				✓	
IDEA	✓						✓	✓	✓				✓	✓
VR Basic Grants	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓
Rehabilitation Act Sec. 504*					✓	✓	✓							✓
ADA*												✓		
JOBS	✓			✓	✓						✓		✓	✓

*Limited or no federal resources provided.

Notes

1. The administration's bill in the House of Representatives is H.R. 2884.
2. Internal memorandum used in ED and DOL discussion of plans for the administration's school-to-work initiative.
3. The programs listed in the bill's waiver provision include: Chapter 1 of ESEA, Chapter 2 of ESEA, the Eisenhower Mathematics and Science Education Act (Title II of ESEA), the Emergency Immigrant Education Act of 1984, the Drug-Free Schools and Communities Act of 1986, the Carl D. Perkins Vocational and Applied Technology Act, and several sections of the Job Training Partnership Act (including performance standards, Summer Youth Employment and Training Program, Youth Training Program, Job Corps, and the Youth Fair Chance Program).
4. Norton W. Grubb et al., Order Amidst. . ., Report to the U.S. Congress. . .(Berkeley, CA: National Center. . ., August 1990).
5. Two maps on state-level programs relevant to school-to-work initiatives have already been prepared. These include the report on vocational education and training by McDonnell and Zellman of the National Center on Research in Vocational Education (1993) and the publication on federal and state child labor laws prepared by the Academy for Educational Development (Rose, Fraser, and Charner 1993).
6. The Cooperative Education program (Title VIII of the Higher Education Act) provides planning and continuation grants for 2-year and 4-year institutions. Schools receiving grants must provide for institutionalizing the programs after 5 years of federal support. The TJTC program is perceived as relatively ineffective at stimulating employer involvement and is faulted for stigmatizing participants. Paperwork also may explain employers' reluctance to participate.
7. Bailey and Merritt 1993.
8. For the National Apprenticeship Act, which also provides few federal resources, we determined relevance by asking what aspects of registered apprenticeship programs may serve as a model for School-to-Work Opportunities efforts.
9. Some of the administration's proposals for Chapter 1's reauthorization, if accepted by Congress, would result in more high schools being served by Chapter 1 programs.
10. Grubb et al. 1990.
11. *Ibid.*

Appendix
Profiles of Individual Programs

Details about the key provisions of each federal program appear in the following profiles. A word is necessary to clarify the structure of the profiles and to assist readers' selective use of them. Each profile addresses a specific program or piece of legislation. For those programs nested within an overarching federal law and for which it is important to understand the interrelationship of programs, we clustered the programs into one profile. For example, the four JTPA programs comprise one profile on the JTPA statute. A similar presentation is used for the Perkins Act, where the Basic State Grants program and the Tech-Prep Education program comprise one profile and for the programs pertaining to persons with disabilities—IDEA, the Rehabilitation Act's VR State-Federal grants program, Section 504, and ADA—which are included within one profile. In most other cases, a program appears as a single profile—for example, Chapter 1 ESEA and Chapter 2 ESEA are single profiles because they are distinct from each other.

Each profile discusses a program in two ways. First, we present an overview of the program and its key features. Second, we summarize the implications the program may have for helping create and sustain the types of career preparation paths defined in the proposed School-to-Work Opportunities legislation. Because the reauthorization of three programs—Chapter 1 ESEA, Chapter 2 ESEA, and Eisenhower Mathematics Science Grants (Title II ESEA)—is currently pending in Congress, we have included information about the Clinton Administration's proposals to change these statutes. These are only proposals for change that Congress has yet to act upon.

Job Training Partnership Act

The Job Training Partnership Act (JTPA) is the nation's largest job training program for the disadvantaged and for dislocated workers.[1] Four JTPA programs are directly relevant to state and local school-to-work efforts: the Youth Training Program (Title II–C), Summer Youth Employment and Training Programs (Title II–B), the Education-Coordination Set-Aside (Section 123), and the Youth Fair Chance Program (Title IV–H).[2] As a group, these programs provide a wide range of education and training services to in-school and out-of-school youth who are, by and large, economically disadvantaged.

Before to discussing each of the four programs, a few key features about the governance of JTPA are important to understand.

- Local control of program services and private sector involvement in developing and overseeing job training programs is a major emphasis in JTPA. To enhance local control, the Act authorized states to create service delivery areas (SDAs) to receive JTPA funds and administer JTPA programs. Most of the approximately 600 SDAs nationwide are local entities, although in some cases the SDA encompasses an entire state.

- A Private Industry Council (PIC) oversees the activities of each SDA. Each PIC is composed of a majority of private sector representatives with additional representatives from labor, education, and other relevant groups.

- To promote coordination, JTPA requires states to create a State Job Training Coordinating Council (SJTCC) to oversee JTPA activities in the state and to annually submit a Governor's coordination and special services plan to the Secretary of Labor that describes how JTPA activities will be coordinated with other state and local education and training services.[3]

Overview

JTPA Title II–C is a year-round program that provides training and related services to economically disadvantaged youth between 14 and 21 years old.[4] While the program focuses on disadvantaged youth, its goals are in many ways consistent with the School-to-Work Opportunities bill. These goals include improving the employability of economically disadvantaged youth, increasing the employment and earnings of youth, and helping youth to address problems that impair their ability to make successful transitions from school to work, apprenticeship, the military, or postsecondary education and training. Funding for this program flows through states to SDAs (although states retain 18 percent of program funds); in FY 1993, the funding level was about $676 million.[5]

Several elements of the program design stand out:

1. **Service Strategies**

Based on individualized needs assessments, programs assign youths to classroom training, on-the-job training, or other services including counseling, mentoring, limited private sector internships, job search assistance, job shadowing, customized training, and supportive services. While SDAs can provide these services directly, more commonly they subcontract with other service providers such as proprietary schools, vocational education institutions, and nonprofit institutions.[6] (Barnow, 1992) Traditionally, these services have tended to be short-term; for example, a recent study found a typical out-of-school youth participated in Title II–C for only 3 to 4 months. (Abt, 1993) To promote more intensive services over quick fixes, the 1992 JTPA amendments strengthened the program's emphasis on services that increase participants' basic educational and occupational skills.

2. **Eligibility**

Except in a few special cases, youth must be economically disadvantaged to participate.[7] While programs may serve in-school and out-of-school youth, at least 50 percent of the participants in an SDA must be out-of-school youth. In response to concerns that some SDAs were "creaming" program participants—that is, passing over hard-to-serve youth who require intensive services in favor of youth who are more easily placed—the 1992 amendments to JTPA further targeted Title II–C toward hard-to-serve youth. Hard-to-serve youth include individuals who are basic-skills deficient, one or more grades below grade level, school dropouts, pregnant or parenting, homeless or runaway youth, offenders, or persons with disabilities. The Act requires at least 65 percent of in-school youth and 65 percent of out-of-school youth to meet the definition of hard-to-serve youth (in addition to being economically disadvantaged).[8]

3. **Performance Standards**

Performance standards are a key element of Title II–C programs. These standards are set by the U.S. Department of Labor (DOL) and in most cases modified by states and can include (among others): attainment of employment competencies established by the PIC, dropout prevention and recovery, school completions, and enrollment in other training programs, apprenticeships, postsecondary education, or the armed forces. States can add standards or vary standards based on the demographics of the population served; in addition, states are responsible for monitoring, sanctioning, and rewarding SDAs. Rewards are generally incentive grants to SDAs, while sanctions can include technical assistance and the requirement to develop a reorganization plan.

States have up to 5 percent of Title II–C funds at their disposal for incentive grants and technical assistance. While the financial consequence of the performance standards are fairly minor in absolute terms, evidence has shown the standards encouraged creaming, particularly in the program's early years. (Barnow, 1992) To mitigate this problem, states and the federal government have worked to improve the ways states can adjust standards so SDAs are not penalized by working with a more difficult-to-serve population. In addition, recent amendments have eliminated the cost per participant standard, which many observers had viewed as encouraging quick fixes over longer term training. (Barnow, 1992)

Implications for School-to-Work Opportunities

Elements of Title II–C programs resemble School-to-Work Opportunities programs envisioned in the Clinton Administration's bill. For instance, Title II–C's mission includes helping youth make a transition into the workforce or further education and training; it provides funds for paid work experience and on-the-job training and for basic education and training; it offers support services to disadvantaged youth who might not otherwise be able to take advantage of training services; and it helps match employers with youths seeking employment. At the same time, it lacks key components of the proposed school-to-work system. For example, it offers relatively short-term services; program completers do not receive a widely recognized credential or certificate of mastery; it often supplements the high school curricula of in-school youth rather than redefining it; and it focuses almost exclusively on disadvantaged youth.

Given the overlap between Title II–C programs and school-to-work systems, some local school-to-work programs may elect to coordinate with SDAs for reasons including financial support, JTPA's experience working with disadvantaged youth, and its connections to employers. In fact, a recent study found that local JTPA programs do coordinate and cooperate with other education and training providers in myriad ways. For example, JTPA and high schools in Miami have coordinated to provide extra counselors for potential dropouts and a work-study program in Illinois combines part-time jobs and high school employability skills classes. (Grubb et al., 1990).

The extent to which Title II–C might play a role in local and state school-to-work efforts will depend on four critical elements.

1. Local Flexibility

Title II–C services are determined at the local level, subject to state and federal constraints such as performance standards and restrictions on eligibility and certain services. Hence, the extent of collaboration will vary across SDAs and will depend on a variety of factors including local politics and the relationships between the local JTPA program and other service providers. (Grubb et al., 1990) Because coordination already exists, there is optimism new links will take hold if the School-to-Work Opportunities bill becomes law.

2. Eligibility and Program Mission

Title II–C is aimed at disadvantaged youth. Hence, only JTPA-eligible students will directly benefit from links between Title II–C and other school-to-work programs. Further, while much of Title II–C can be waived under the School-to-Work Opportunities bill, the eligibility requirements are singled out as not open to waivers.

Given this focus on the disadvantaged and JTPA's history of collaboration, several forms of collaboration seem most likely. These include using Title II–C to provide additional education, training, or support services to JTPA-eligible youth who are participating in a mainstream school-to-work program with non-JTPA eligible students and using Title II–C to develop a school-to-work program that enrolls only JTPA-eligible youth. The latter option is especially feasible in poor high schools when all students in the school can be considered eligible for JTPA. However, to the extent employers attach a stigma to JTPA students and are unwilling to offer them training or employment as a result, collaboration between Title II–C and school-to-work efforts may be hindered.

3. Type and Duration of Services

Title II–C allows a range of school-to-work related services and offers connections to employers and employment (including subsidized work and on-the-job training) that could be vital for school-to-work efforts. However, the short-term training that Title II–C typically provides often results in JTPA students being placed in low-skill, low-wage service jobs—not the high skill, decent wage jobs many planners of school-to-work systems envision. Further, because short-term services are part of the JTPA program culture, some SDAs may be reluctant to participate in longer term school-to-work efforts.

4. Performance Requirements

In the past, performance requirements have encouraged some SDAs to cream participants and to offer short, low-intensity services. Recent amendments, including the elimination of cost per placement standards, have sought to eliminate some pernicious effects of performance standards, and states and DOL have worked to improve ways to "hold SDAs harmless" by varying performance standards based on the population served. While these changes will increase flexibility at the local level, some SDAs may resist providing long-term school-to-work services if they do not see these services leading to improvements on the performance standards.

Summer Youth Employment and Training Program (Title II–B)

Overview

JTPA Title II–B provides work experience and basic education during the summer to disadvantaged youth between 14 and 21 years old. The program's goals include increasing the basic educational and citizenship skills of youth, encouraging school completion or enrollment in supplementary or alternative school programs, and providing eligible youth with exposure to the world of work. In FY 1993, just over $1 billion was appropriated for the summer program.

Funds are distributed to SDAs using the same formula as Title II–C, except states do not set aside funds. Like Title II–C, SDAs determine what services are provided under Title II–B each summer. The role of the states and federal government in steering the program is further diminished because no performance requirements are attached to the receipt of Title II–B funds. Other critical features of the program design include the following:

1. Service Strategies

Based on a needs assessment, most participants are assigned to classroom training, a paid summer job with a public or non profit agency, or both.[9] SDAs generally subcontract with local government agencies or non profit organizations to provide summer jobs and with local education agencies to provide education services. Common work experience placements include state and local government offices, park and recreation agencies, non profit day-care centers and hospitals, and public housing projects. Private, for-profit companies are generally not eligible to provide summer jobs under Title II–B. Participants in the education component are typically paid at a rate comparable to participants assigned to work experience. The program also authorizes funds for support services necessary to enable youth to participate in the program.

2. Eligibility

Like Title II–C, the summer education and jobs program is targeted to economically disadvantaged youth between 14 to 21 years old. Participants may be concurrently enrolled in Title II–B and II–C programs.

Implications for School-to-Work Opportunities

The summer youth employment and training program (Title II–B) can link disadvantaged students to public and non profit employers, basic educational services, and support services. The most obvious implication for this program in a school-to-work system is its potential to supplement other school-to-work services disadvantaged students receive. This is already happening, for example, in Texas, where disadvantaged youth in tech-prep programs are receiving JTPA services like on-the-job training, job shadowing, and counseling using Title II–B funds. (DOL, 1992)

Several issues surrounding the Title II–B program will determine the program's role in a school-to-work system. These issues include local flexibility, eligibility requirements, and the type and duration of services.

1. Local Flexibility

Like Title II–C, summer employment and training programs are developed at the local level by SDAs. Hence, the extent of collaboration between JTPA and the school-to-work system will depend on a variety of local factors, as described earlier for Title II–C. Further, because state and federal performance requirements do not apply to Title II–B, local flexibility is even more significant under Title II–B than Title II–C.

2. Eligibility

Because Title II–B is targeted to youth who are economically disadvantaged, its role in a larger school-to-work system will be limited to this population. In practice, this might mean that localities will use Title II–B funds to provide additional school-to-work services to JTPA-eligible youth.

3. Type and Duration of Services

If Title II–B is used to supplement school-to-work services disadvantaged students receive, these additional services—provided during the summer only—could include academic remediation, work experience, or support services like transportation and child care. However, the potential role of Title II–B funded work experience may be somewhat limited because Title II–B enrollees are often placed in low-wage, low-skill jobs that may not be consistent with the purpose of the school-to-work program.

JTPA State Education-Coordination Set-Aside Program

Overview

The Education-Coordination Set-Aside provision, also called the 8 percent set-aside, makes explicit JTPA's key aim: encouraging cooperation between JTPA and education providers to better meet the needs of the disadvantaged. Under this provision, states set aside 8 percent of their Title II–A and II–C allocation to coordinate education and training efforts and to provide direct education services to JTPA-eligible individuals.[10] These direct services commonly include literacy or basic skills, dropout prevention, occupational training, and school-to-work activities and are generally provided through cooperative agreements between local and state educational agencies and SDAs.

The education-coordination set-aside differs from other JTPA programs in several important respects, including: states' roles in setting priorities, matching requirements, eligibility criteria, and absence of performance standards.

1. State Role in Setting Priorities

In contrast to Titles II–B and II–C in which services are primarily driven by localities, states control how set-aside funds are allocated and used. For example, states wishing to play an active role can create statewide education and training programs for the disadvantaged with set-aside funds or can establish an RFP process to distribute set-aside funds to local programs consistent with state priorities. Conversely, some states opt to play a more minor role and simply allocate the funds by formula to SDAs. (Grubb et al., 1990)

2. Matching Requirement

State and local agencies must match dollar-for-dollar (100 percent match) any set-aside funds used for direct services to participants. Matching funds or in-kind contributions can come from federal non-JTPA programs (such as the Perkins Act, Vocational Rehabilitation Act, Adult Education Act, or Pell Grant program), local or state government programs, or private sources.

3. Eligibility Restrictions and Absence of Performance Standards

States may use up to 25 percent of the direct service funds on non-economically disadvantaged individuals, which means that the program's eligibility restrictions are actually less stringent than the Title II–C requirements. However, because no performance standards are attached to set-aside funds, many states and localities use the program to serve the most disadvantaged JTPA participants. In fact, some states view serving the neediest individuals as a key part of the set-aside program's mission and do not fully use the "25 percent" window. (National Commission for Employment Policy, 1991)

Implications for School-to-Work Opportunities

JTPA opens the door to states' using set-aside funds for school-to-work programs by explicitly stating funds can be used for a wide variety of education and training services that "provide school-to-work transition services of demonstrated effectiveness."[11] The absence of performance standards may further encourage states and localities to use set-aside funds to develop or implement novel school-to-work approaches without the risks involved in using Title II–C funds, which include performance standards.

The following aspects of the set-aside may be particularly critical to states and localities examining the role of the set-aside program in a school-to-work system:

1. Eligibility Requirements

While the set-aside program offers more flexibility than other JTPA programs with respect to eligibility, it maintains JTPA's emphasis on serving the disadvantaged by requiring at least 75 percent of program participants to be economically disadvantaged individuals. Hence, set-aside funds may be most useful as a supplement to help JTPA-eligible students participate in a school-to-work program that serves all students in a school or as a funding source for school-to-work programs that exclusively serve JTPA-eligible youth.

2. State Control

States, not localities, ultimately decide how to use set-aside funds. Some states may opt to use set-aside funds to promote school-to-work systems consistent with the Administration's bill—for instance, by establishing an RFP process to distribute set-aside funds to localities developing school-to-work systems. States that traditionally have had a strong role in the administration of set-aside funds may be especially likely to develop statewide priorities regarding the use of the set-aside funds for the School-to-Work Opportunities effort. If the state's role is weaker—for example, if the state simply funnels set-aside funds to SDAs—the program's role in School-to-Work Opportunities programs will vary depending on local priorities.

JTPA Youth Fair Chance Program (Title IV–H)

Overview

Under the recently authorized Youth Fair Chance program, DOL will award $50 million in up to 25 1-year grants (renewable for up to 5 years) in the first year of the program to high poverty communities to provide comprehensive education, training, and support services to youth and young adults. The program's goals include ensuring access to education and job training assistance for youth in urban and rural high poverty areas, providing comprehensive services to underserved and disadvantaged youth, enabling communities with high concentrations of poverty to establish and meet goals for improving the opportunities available to youth, and facilitating the coordination of comprehensive services to serve youth in such communities.

While this is a new program that provides a small number of grants (and hence differs from most JTPA programs), it is included because of its link to the School-to-Work Opportunities bill. According to the bill, funds appropriated for the Youth Fair Chance program may be awarded in combination with grants to high poverty areas to implement School-to-Work Opportunities programs.[12]

1. Community and Individual Eligibility

Program grants are made to high poverty communities, generally through the SDA that serves the community. The Act defines high poverty communities to include urban census tracts or nonmetropolitan counties with at least a 30 percent poverty rate. Individual eligibility for Youth Fair Chance programs is based on age and geographic location, not on income. Specifically, all youth and young adults ages 14 through 30 who live in a high-poverty community receiving funds are eligible.[13]

2. Types of Services

Communities can provide a broad array of education, training, and support services to the eligible population.[14] Youth Fair Chance funds may be used to support paid work experience if the work experience is combined with other education and training activities.

Communities specifically designated by the DOL may also create a job guarantee program for youths. Under this program, grantees guarantee jobs to youth age 16 to 19 who undertake a commitment to continue and complete their high school education and who successfully meet school attendance and performance standards. Communities provide wage subsidies of up to 50 percent to employers. These subsidies are limited to 1 year and must encourage employers to provide advanced or specialized training or a structured and integrated learning experience involving the school and employer. Further, youths employed under the job guarantee provision are not permitted to work for more than 15 hours per week during the school year.

Implications for School-to-Work Opportunities

The Youth Fair Chance program, like School-to-Work Opportunities program grants in high-poverty areas, provides funding for coordinated education and training services in some of the nation's most distressed communities. Both programs have the potential to significantly bolster school-to-work efforts in those communities. The fact that funds from the two programs can be awarded together further underscores the potential role of the Youth Fair Chance program in a School-to-Work Opportunities system. The following key features of the Youth Fair Chance program deserve specific mention:

1. Community-Driven Services

Localities are the program grantees and hence determine how program funds are used. As a result, the extent to which the program supports local school-to-work efforts will vary across communities. The state's role is more minor; for instance, grantees must submit applications to the governor for comment before submitting them to DOL.

2. Type of Services

The funds program can be used for a range of education and training services and program models that are consistent with the School-to-Work Opportunities bill. For example, the program authorizes paid work experience that is integrated with other education and training services, and the job guarantee program links education and paid work experience that involves a structured training component. In both cases, however, it is unclear how closely the work and school experiences will be linked. The program also seeks to promote access by requiring communities to provide critical support services such as child care, transportation, and family crisis counseling.

3. Eligibility

Because the Youth Fair Chance program is aimed at residents of high poverty areas, it will have to overcome obstacles similar to those faced by other JTPA programs. Most significantly, there is a risk participants may be stigmatized, particularly in the eyes of employers. As a result, some communities may find it difficult to locate employers willing to provide high-quality, meaningful training opportunities for these youth. The paid work experience component and the subsidized job guarantee program may encourage employers to participate, although at this early date it is difficult to predict the success of these efforts.

National Apprenticeship Act of 1937

Overview

The National Apprenticeship Act of 1937 defines the federal government's role in the registered apprenticeship system. This system, whose roots go back to the trade apprenticeships of the middle ages, is an important route by which many young adults enter a skilled trade or profession. Apprentices generally receive supervised, structured on-the-job training and a complementary technical instruction component, often at a community college. Apprentices are initially paid about half the wage of fully trained workers for their work, with wages rising over time as the apprentices' skills increase. Apprenticeship programs can last from 1 to 6 years depending on the occupation, and individuals who successfully complete their apprenticeships become journey workers and earn a portable, widely-recognized Apprenticeship Completion Certificate. Currently, there are about 43,000 registered apprenticeship programs in over 830 occupations and about 350,000 registered apprenticeships nationwide. (DOL,1992)

The age and education level of registered apprentices distinguishes the registered apprenticeship system from "youth apprenticeships." Most newly registered apprentices—about 84 percent—are over 21 years old.[15] Apprenticeship programs generally require a high school diploma as a prerequisite, and, increasingly, many apprentices have acquired some college education.

The apprenticeship system is privately driven. Employers, sometimes with labor unions, generally sponsor—that is, plan, administer, and pay for—apprenticeship programs. The federal role is limited and includes promoting the establishment of apprenticeship programs, setting uniform standards for apprenticeships, protecting the health and safety of apprentices, registering apprenticeship programs and apprentices, and providing technical assistance to programs.

DOL's Bureau of Apprenticeship and Training (BAT) conducts most federal activities related to apprenticeships, although in some states a federally approved state apprenticeship agency conducts apprenticeship-related functions.[16]

Implications for School-to-Work Opportunities

The registered apprenticeship system is perhaps the most time-tested and successful model of integrating classroom and on-the-job training for young adults entering skilled occupations. Yet, because most registered apprentices are over 21 the program does not generally involve secondary schools; hence, this sets the registered apprenticeship program apart from other School-to-Work Opportunities programs envisioned in the Administration's bill. Nonetheless, the registered apprenticeship system merits closer examination for at least two reasons: as a model of a successful apprenticeship program and for its role in school-to-apprenticeship programs.

1. Model of a Successful Apprenticeship Program

The long history of the registered apprenticeship system offers a wealth of experience to those seeking to create effective school-to-work programs such as youth apprenticeships and can serve as a model for these efforts. Registered apprenticeships include many components that many experts view as critical to school-to-work programs:

- Paid work experience;
- Supervised, structured job training that includes tasks to be mastered at increasingly higher skill levels;
- A nationally recognized, portable credential for graduating apprentices;

- A major role for employers and labor unions in sponsoring programs and in developing skill standards;
- A governmental role in encouraging partnerships, setting standards for apprenticeship programs, and certifying programs; and
- Classroom study integrated with on-the-job training.

Examining the registered apprenticeship program also highlights challenges that developers of School-to-Work Opportunities programs will face. For instance, employers in many industries may choose not to hire youth apprentices when they can hire registered apprentices who are more mature, better educated, and less likely to change jobs. In addition, unions may resist additional programs in which youth are hired at lower wages than fully skilled workers.[17]

2. Role of School-to-Apprenticeship Programs

Although registered apprenticeships generally do not involve secondary schools and high school students, a number of high schools are developing school-to-apprenticeship programs for their students. These programs enable 11th- and 12th-graders to get a head start on apprenticeships by working part time as an apprentice during high school. After graduation, students continue with the same sponsor as full-time apprentices until completing the apprenticeship and being certified as journey workers. Because of their focus on high school students, school-to-apprenticeship programs are more consistent with the vision of School-to-Work Opportunities than registered apprenticeships alone.

Federal programs such as JTPA Title II–C provide funds for school-to-apprenticeship programs for disadvantaged youth that can help smooth the transition to registered apprenticeships. In addition, Job Corps sponsors pre-apprenticeship programs, which like Title II–C school-to-apprenticeship programs seek to enable disadvantaged young people to participate in registered apprenticeships. (Bureau of Apprenticeship and Training, 1993)

U.S. Employment Service Program (Wagner-Peyser Act)

Overview

The Wagner-Peyser Act established the current federal-state system of public employment offices. This system provides no-fee employment services to employers and job seekers through a nationwide network of about 2,500 employment offices. (Bendick, 1989) The U.S. Employment Service (ES) offers registered job seekers access to a list of job vacancies as its primary service; however, a small fraction of job seekers also receive counseling, testing, training referrals, or active job development.

DOL's ES sets overall policy for the program and provides funding and technical assistance to states. State employment offices provide most of the direct employment services; states have considerable latitude in the services they offer. Federal funds are allocated to states using a demographic formula based on the size of the state's labor force and the number of unemployed individuals in the state. In FY 1993, the federal government appropriated about $900 million for ES, most of which was distributed to states. That year, ES placed 2.6 million individuals in jobs.

While anyone legally qualified to work can register for employment services, registration is mandatory for people receiving certain federal benefits such as Unemployment Insurance. In fact, ES has historically served as the "administrative and enforcement arm of various federal income-transfer programs. . .[This] has blurred the agency's sense of mission and has distracted resources from its labor placement efforts." Further, the link between ES and federal income-transfer programs has shifted the emphasis of ES from mainstream workers toward the more difficult-to-serve and as a result has stigmatized ES in the eyes of some employers and job seekers. (Bendick, 1989)

Implications for School-to-Work Opportunities

For youths preparing to enter the workforce, a source of up-to-date information about available jobs and careers is clearly of value. In fact, youths seeking full-time and summer jobs have traditionally made up a significant portion of ES clients. Further, states have flexibility to coordinate programs under Wagner-Peyser with other programs; for instance, under certain conditions specified by the legislation, states can use Wagner-Peyser dollars to fund Perkins Act and some JTPA programs.[18] Hence, states and localities wishing to include job search activities within a school-to-work system may be able to use Wagner-Peyser funds to provide these services.

In its current form, however, the ES has several limitations that work to reduce its potential usefulness within School-to-Work Opportunities systems. Most obviously, low-wage, low-status jobs are overrepresented in the job listings, while only a small fraction of job postings are for professional, managerial, or technical occupations. This is partly the result of the stigma many employers attach to the ES as being removed from the mainstream. These poorly paid, entry-level service jobs are precisely the jobs that most proponents of school-to-work systems are trying to help youths avoid.

The ES's budget is another constraint. Given its current funding level and its mandate to serve all comers—including those required to register as a condition of receiving other benefits—the ES typically provides a low-intensity service to a large number of people. While many youths could benefit from a more intensive system of career counseling and information, the ES currently appears unlikely to have the resources to significantly strengthen its youth services.[19]

Fair Labor Standards Act

Overview

The Fair Labor Standards Act (FLSA) is the principal federal legislation governing minimum wages and the employment of minors. The law covers most U.S. employees, including youths and young adults enrolled in school-to-work programs.[20] While state laws are not included in this report, states may have additional minimum wage and child labor laws, and it is the more restrictive provisions (state or federal) that apply in each state.[21]

FLSA sets the federal minimum wage for regular and overtime work.[22] The Act also allows employers to pay certain youths a sub-minimum training wage. Specifically, most employees under 20 years of age may be paid a training wage of 85 percent of the minimum wage for up to 90 days under certain conditions.[23] Employers may also pay certain full-time students, student learners, apprentices, and workers with disabilities less than the minimum wage if they obtain special certificates from DOL.

FLSA's child labor provisions limit the types of jobs and hours minors—youths under 18 years of age—can work.[24] While a complete description of federal child labor law is beyond the scope of this report, major points are enumerated below.[25] First, minors ages 14 and 15 may work; however, this work must be in specified occupations outside school hours for limited periods of time each day and each week.[26] Second, minors ages 16 and 17 may work in any occupation except occupations declared hazardous by the Secretary of Labor (such as mining, logging, and roofing). However, the law allows 16 and 17 year old registered apprentices and student learners to work in some hazardous occupations under certain conditions.[27] Finally, the law provides more flexibility for 14 and 15 year olds participating in approved school-supervised and school-administered Work Experience and Career Exploration Programs (WECEP).[28] Students enrolled in WECEP may work during school hours, for more hours per week, and in a wider array of occupations than nonstudent learners.

Implications for School-to-Work Opportunities

FLSA's minimum wage and child labor provisions come into play when school-to-work programs include an employment component—for instance, if the programs provide paid work experience as specified by the Clinton Administration's bill.[29] However, the minimum wage provisions are only a constraint for school-to-work programs that would want to hire youths at sub-minimum wages. In practice, this is often not the case; for example, programs or employers may opt to pay higher than minimum wages to attract youths or signal that the student learner's work is valuable to the employer. If school-to-work programs do want to pay youth sub-minimum wages, several potential options exist for employers, including paying training wages or seeking a special certificate from DOL. In some cases, school-to-work programs may also pay youth a stipend—that is, a fixed amount not linked to hours worked.

School-to-work programs that employ youth must comply with federal child labor laws. These laws are particularly stringent for 14 and 15 year olds, although WECEP provisions may be used in certain cases to gain flexibility in working with students enrolled in work experience programs linked to their educational experience. The barring of minors (except certain apprentices and student learners) from work in hazardous occupations may also be a constraint for some school-to-work programs; for instance, programs might have to delay on-the-job training or work experience in these hazardous occupations until youths turn 18.

Carl D. Perkins Vocational and Applied Technology Education Act of 1990

The Perkins Act defines the federal role in assisting and improving secondary and postsecondary vocational education programs. Initiated in 1917, federal assistance to vocational education stands as one of the earliest efforts in which the federal government played a role in expanding a particular form of educational preparation for young people. Although the Perkins Act includes authorization for several special programs such as community-based organizations, consumer and homemaking education, and career guidance and counseling, by far the most significant parts of the legislation for the School-to-Work Opportunities initiative are those that provide basic grants to states for vocational education and state and local grants to develop and expand tech-prep programs.

Perkins Basic State Grants Program

Overview

If major restructuring of career preparation for secondary school students is to occur on a broad scale, it is unlikely to progress very far without drawing upon the resources and reforms tied to the federal basic grants program. Yet the billion dollars in Perkins basic grants constitute a very small fraction (about 10 percent) of total dollars supporting vocational education. Nevertheless, many experts see the basic grants with their emphasis on quality improvements and access for all students as a driving force in setting priorities for vocational education nationwide. Moreover, since these grants can be used for a wide range of activities, they theoretically could lend a major boost to creating the school-based and work-based learning opportunities in school-to-work programs.

The 1990 reauthorization of the federal vocational education program reoriented Perkins basic grants toward improving the quality of vocational program offerings and ensuring all youth—particularly those who were poor, disabled, deficient in English language skills, or female—had access to these improved programs. Implementation of these amendments, often called Perkins II to distinguish them from the 1984 Perkins Act (or Perkins I), has been underway in the states and localities for a relatively short time. A few studies have attempted to examine changes in the last two years, but the national assessment of vocational education called for in Perkins II will not report findings until January and July 1994. The recency of efforts to alter the ways states and localities deliver vocational education is important to keep in mind when contemplating how Perkins II basic grants may factor into the reform agenda posed by the new School-to-Work initiative.

The following four features are critical to the basic grants program:

1. Funds Targeting Provisions

Although states can use some funds for state-level activities, they must use formulas to direct the majority of Perkins II basic grants to educational institutions (school districts, vocational-technical schools, and postsecondary schools) with high concentrations of disadvantaged students. Consequently, not all districts or all high schools have Perkins funds. States also have little control over how much funding districts, schools, and programs receive.[30] States also must ensure federal dollars do not replace dollars from other state and local sources.

2. Program Emphases and Allowable Uses of Funds

Perkins II requires grantees to adopt integrated curricula that combine academic and vocational curricula, but it only broadly describes integrated curricula.[31] Most grantees appear to be busy instituting integrated or linked curricula; initial reports suggest that developing applied mathematics and science courses or requiring academic courses as part of an occupational sequence are common paths. Schools also seem to be upgrading vocational education courses rather than contextualizing courses in the academic departments of high schools or teaming faculty from both departments to teach classes. (GAO, 1993)

Except for a 5 percent limit on program administration, districts and schools can use their Perkins basic grant funds in any number of ways. Tech-prep, cooperative vocational education, and apprenticeship programs are among the allowable uses of basic grants that receive explicit mention in the statute.[32] Despite this form of encouragement from Congress, however, these approaches have yet to show major increases in student enrollment.

3. State and Local Decisionmaking Structure

The basic grants program vests direction and supervision of the basic grants program at the state level in a board of vocational education. Governors do not directly control the basic grants program.[33] Despite the state-level supervision, in practice the decisionmaking structure allows considerable discretion to local recipients in how they decide to use their Perkins money. The state role is one of planning and assessing needs; setting funding shares for secondary and postsecondary levels; disbursing grant funds through funding formulas and review of local applications; providing leadership and technical assistance; and establishing standards to monitor and evaluate the performance of local vocational education programs.[34]

Local administration of the vocational education program—at least in the past—has stood separate from the rest of the instructional program in school districts and has not been closely linked to employers and other providers of occupational education and training. Through requirements for integration and coordination, Perkins II endeavors to break down these traditional patterns.

4. Performance and Evaluation Standards

A major thrust of Perkins II is requiring more frequent evaluation of local programs and establishing standards for assessing the outcomes of such programs. By late 1992 all states must implement a statewide system of core standards that must include competency gains and performance measures. To remedy substandard performance, states will require local improvement plans.[35]

Implications for School-to-Work Opportunities

1. State and Local Discretion

The Perkins basic grants program provides a limited but significant pool of resources at the state and local levels that can be used to reinforce and extend the school- and work-based learning emphasis contained in the proposed legislation. The integration of academic and vocational curricula, an emphasis on learning about broad aspects of an industry or occupation, and the availability of resources for inservice training and links to business and industry are consistent elements between the Perkins basic grants program and the School-to-Work Opportunities proposal. Tapping these resources, however, may require the development of a consistent, shared vision among state boards of vocational education and local recipients of Perkins basic grants. Developing common objectives at the local level appears especially critical since local authorities have considerable latitude in how Perkins funds are directed and used.

2. Counterpressures to Redirecting Basic Grants to School-to-Work Programs

The fact that programs such as apprenticeship, tech-prep, and cooperative education have yet to burgeon despite the potential support of Perkins basic grants offers a stark reminder of the challenges that may confront those seeking to implement these approaches. Using Perkins resources to redirect traditional vocational education practices involves undoing, or at least modifying, past decisions to fund certain programs and support specific staff. The low enrollments in these school-to-work programs is also consistent with many experts' acknowledgement that creating structured work-based learning experiences and integrated curricula is very difficult and time consuming. To do both may require concentrating resources even more than is called for in Perkins II—a hard task for local administrators to undertake when pressures exist to spread resources across schools.

3. Nonreplacement of State and Local Funds in Disadvantaged Schools

State and local officials must be careful to ensure Perkins dollars supplement and do not supplant other state and local funds for implementing the new system of career preparation in districts and schools that receive Perkins dollars. While Perkins does not require targeting services on particular students within a school, its intent clearly is to expand the available educational resources in districts and schools that serve concentrations of disadvantaged students.

Perkins Tech-Prep Education Act

Overview

Title III–E of Perkins II authorizes federal spending to stimulate the development and expansion of Tech-Prep programs. Tech-Prep programs, as defined by the law, combine secondary and postsecondary education and (1) lead to an associate degree or 2-year certificate; (2) provide technical preparation in at least one field of engineering technology, applied science, mechanical, industrial, or practical art or trade, or agriculture, health, or business; (3) build competence in mathematics, science, and communications through a sequential course of study; and (4) lead to placement in employment. Although the various elements of the Tech-Prep model have been used for some time, the approach recently has garnered increased attention with several states establishing Tech-Prep consortia throughout the state. Despite these examples of expansion, observers of Tech-Prep's development acknowledge the program is still in its infancy. The federal Tech-Prep program attempts to catalyze the expansion of this approach through the provision of funds that states can award competitively or by formula as planning or demonstration grants to local consortia. Just over $100 million in federal grant assistance was available in FY 1993.

The federal Tech-Prep program embodies many of the core elements of the School-to-Work Opportunities system presented by the Clinton Administration with one major exception: Tech-Prep as defined by Perkins II does not require a work-based component. The federal statute indicates that a 2-year apprenticeship program following secondary school can substitute for the 2 years of higher education that constitute the second half of the 2 + 2 concept that underlies tech-prep. Thus, while the Tech-Prep Act permits using funds for apprenticeship programs and other activities based in the workplace, it leaves the decision to do so to states and localities.

In fact, the Tech-Prep statute imposes few requirements on grantees, permitting states and local consortia considerable flexibility in defining tech-prep programs. A few requirements are worth noting, however, along with areas of discretion.

1. Decisionmaking Structure

Similar to the Perkins basic grants program, the state board of vocational education is the recipient of federal Tech-Prep money to the state. The state board can delegate oversight and administration functions to any state agency it chooses. In most cases, responsibility for administering Tech-Prep has been assigned to the secondary vocational education agency and less often to a higher education or community college agency. (Layton and Bragg, 1992)

2. Distribution of Funds

With approval of the state board, the state administering agency can make competitive awards or use a formula to distribute funds. Most states have relied on competitive awards as a mechanism for promoting development and dissemination of successful programs and practices although some states combine formulas with competitive awards to guarantee all local programs some of the available funds. (Layton and Bragg, 1992) There is no required state match for federal Tech-Prep dollars. Moreover, reports indicate only about a dozen states currently supplement Tech-Prep programs with state dollars.

3. Required Program Elements and Allowable Uses of Funds

Tech-Prep consortia that receive funds must designate one member of the consortium to serve as the sole fiscal agent; begin the program in 11th grade of high school; address dropout prevention and participation of students with special needs; equip students with competencies in mathematics, science and communications (applied academic courses can be used); include business, industry and labor consultation; and provide for effective job placement or transfer to a 4-year postsecondary degree program. The federal definition of technical preparation reportedly discourages programs that prepare students for careers in what are perceived as less technical fields—for example, child care, fashion design, and personal services. Despite this discouragement, some consortia elect to include these occupational areas to appeal to a broader range of students. (Silverberg, 1993) Funds can be used for a variety of purposes including curriculum development, inservice training for teachers and counselors, preparatory services for students and consortia staff, equipment, and acquisition of technical assistance.

Implications for School-to-Work Opportunities Proposal

1. Use of Funds Determined Largely by State Boards and Local Consortia

If they choose to, states and localities would appear to be free to use Tech-Prep grants to fashion the school- and work-based educational programs envisioned in the Clinton administration's proposal. In fact, the Tech-Prep program has the potential either to define a state's restructured occupational preparation path for high school students or to become an important component within it. If Tech-Prep is to become the *defining* framework for the new system, however, it will depend on the enthusiasm of state and local Tech-Prep decisionmakers for developing structured, paid work-based learning opportunities for students. Some local Tech-Prep consortia already have moved in this direction and workplace components have received increasing attention within the Tech-Prep community. (Silverberg, 1993) Of course, if the work-based component of the School-to-Work Opportunities legislation is broadly interpreted to include simulated work activities that take place apart from the workplace, even fewer adjustments to existing Tech-Prep programs will be necessary. Importantly, state boards of vocational education have the authority to add work-based components as a condition for funding eligibility. To date, however, few states have sought to impose additional eligibility requirements to preserve local flexibility. (Layton and Bragg, 1992) Whether the impetus of a School-to-Work Opportunities planning activity in each state will overcome this reluctance to require a work-based component remains a question.

2. Progressive Stage of Tech-Prep Implementation

In many states and localities, Tech-Prep programs, although evolving in their approach, have followed a particular course, which may not be fully consistent with the School-to-Work Opportunities legislation. Redirecting that course may invoke resistance among program staff who may question the feasibility of instituting work-based components on a large scale or who are fearful such moves will detract from accomplishing the goal of expanding Tech-Prep.

3. Modest Federal and State Funding

The fact that Tech-Prep resources remain fairly minimal in many states also may impede efforts to use the Tech-Prep program as a point of leveraging a new system of school-to-work preparation. In school year 1993–1994, 39 states reported one or less than one full-time person assigned to Tech-Prep responsibilities at the state level. Federal Tech-Prep grants to local consortia that year also were relatively minimal, amounting at most to about $300,000. (Silverberg, 1993)

4. The Culture Surrounding Tech-Prep

The culture surrounding Tech-Prep programs in states and localities may prove a significant hindrance. As Tech-Prep programs attempt to distinguish themselves from traditional vocational programs and create an image of challenge and opportunity that will attract students across the spectrum, they may exclude occupational clusters that are not viewed as "high tech" and restrict the program to a select group of able students. These practices may result in Tech-Prep acquiring an elitist label and to the creation of a career educational path that is not intended to address the needs of the large number of students who are not college-bound.

If affiliation with the traditional vocational program affiliation limits the expansion of Tech-Prep programs, however, the introduction of the School-to-Work Opportunities initiative may prove beneficial. Observers note the more Tech-Prep programs are perceived as part of broad school restructuring efforts, the less they carry the negative overtones many parents and employers attach to traditional vocational education. (Bailey and Merritt, 1993) Placing the Tech-Prep program at the forefront of the School-to-Work Opportunities systemwide redesign of secondary career preparation, and, in turn, linking both with the proposed Goals 2000 legislation may offset some Tech-Prep programs current perceptual problems and promote their expansion.

College Work-Study Program

Overview

The federal College Work Study (CWS) program[36] assists needy undergraduate and graduate students in financing postsecondary education costs through part-time employment. Because the program helps to support paid employment for students, it possibly can contribute to the work-based component of local school-to-work programs envisioned in the Administration's proposed legislation. This potential contribution, however, would extend only to financially needy students who are enrolled in school-to-work programs (such as Tech-Prep) that extend into postsecondary schooling. A portion of CWS funds can also be used by the postsecondary institutions that receive grants for the purpose of developing work-study jobs.

Employers who can participate in CWS programs include the postsecondary institutions that receive CWS grants; private, for-profit employers; federal, state, or local public agencies; or private nonprofit organizations. Federal funding amounted to around $600 million in FY 1993; taking the employers' matching funds into account results in an average award per student of approximately $1,000.[37] Employers must provide 30 percent of the federal CWS dollars used to support students' employment; in the case of private, for-profit employers the required match rises to 50 percent. Further, postsecondary institutions may only use up to 25 percent of their CWS total grant for jobs in private, for-profit organizations and these jobs must be academically relevant to students' education.[38]

Students who are eligible for a CWS award from their college must establish financial need according to the needs analysis system imposed on all federal grant or loan assistance. Postsecondary institutions award CWS grants as part of an aid package. The postsecondary schools have latitude to operate a range of work-study options in which to place students, but they must ensure students' hourly earnings are not beneath minimum wage and their maximum earnings are not over their level of financial need. Graduate students have shown declining rates of participation in the program and part-time students typically do not receive awards.

Implications for School-to-Work Opportunities Initiatives

CWS resources conceivably could be used to create structured work-based learning opportunities for youth in the post-high school part of their preparation for a career. Although previous patterns of participation in federal student aid programs indicate students attending community college underutilize these financial resources, many students in public postsecondary vocational schools (and proprietary schools) participate in these aid programs.

Practically speaking, using CWS grants for school-to-work programs will probably require institutions to make significant changes in the types of jobs they develop and the resources they devote to job development. There is little basis to assume CWS jobs meet the structured learning concepts endorsed in the School-to-Work Opportunities bill. Moreover, the statutory limitation on private, for-profit employers' participation may limit the types of structured workplace learning experiences available to an institution. In short, while the CWS program offers resources to school-to-work initiatives, its actual contribution may be marginal as a result of the broad mix of postsecondary institutions that receive CWS grants, pressures from the large number of students eligible for financial assistance, and the program's basic mission of financial support in contrast to development of occupational skills.

Goals 2000: Educate America Act House Bill (H.R.) 1804

Overview

The Clinton Administration recently introduced in Congress the Goals 2000: Educate America Act.[39] While this bill has not been passed into law (unlike the other legislation surveyed in this report), it merits attention for several reasons. First, the role of the bill as a cornerstone of a national education reform strategy has been the subject of widespread public discussion. Second, even if the bill is not passed in its current form, the reform paradigm it embodies may be an indication of the future direction of federal education policy, particularly with respect to the balance it strikes between establishing national standards and maintaining state and local flexibility in achieving those standards. Third, the bill would authorize a substantial amount of federal funds over the next 5 years and over $400 million in FY 1994 alone. Finally, the School-to-Work Opportunities legislation refers repeatedly to Goals 2000 as if it were already part of the educational legislative landscape, which only further underscores the significance of Goals 2000.

Key provisions of Goals 2000 would

- Create a National Skill Standards Board to stimulate the development of a voluntary national system of skill standards and certification.[40]

- Establish seven national education goals and a National Education Goals Panel.[41]

- Create a National Education Standards and Improvement Council to certify voluntary national content and performance standards and opportunity-to-learn standards. The Council would then certify state standards and assessment systems if they meet or exceed the national standards.

- Provide funds over 5 years to state educational agencies for states and localities to develop and implement school restructuring and improvement plans. The bill authorizes $393 million in FY 1994 for this purpose. States would set aside a portion of these funds and distribute the rest to local education agencies through a competitive process.

Implications for School-to-Work Opportunities

While the Goals 2000 legislation envisages a new framework for reforming all levels of education, from early childhood to adult literacy programs, the bill acknowledges the importance of preparing students for the workforce. For instance, in providing funds for state and local education systemic improvement, the legislation explicitly notes these efforts must provide all students with effective mechanisms and appropriate paths to the workforce (as well as to higher education) and businesses should be encouraged to enter into partnerships with schools.[42] The bill would also continue the current trend towards bridging the gap between academic and vocational education. For example, state plans must include strategies for coordinating the integration of academic and vocational instruction pursuant to the Perkins Act, including coordinating content and performance standards under Goals 2000 with standards developed under the Perkins Act.[43]

Perhaps the bill's most direct link to School-to-Work Opportunities, however, is the creation of a National Skill Standards Board that would encourage the "development and adoption of a voluntary national system of skill standards and certification that will serve as a cornerstone of the national strategy to enhance workforce skills."[44] Many school-to-work reform advocates emphasize the importance of creating a national system of credentialing that would certify to employers that workers have attained certain skills and would ensure learners they are obtaining skills valued in the marketplace. Goals 2000 would provide funds for the development of standards and assessments and would provide a common framework in which state and local efforts to develop standards could advance.[45] The National Board would also encourage the development and adoption of curricula and training materials for attaining the skill standards, including structured work experiences and related programs leading to progressive levels of professional and technical certification and postsecondary education. These efforts may dovetail well with the simultaneous development of School-to-Work Opportunities systems in some states and localities.

Federal Pell Grants and Guaranteed Student Loans[46]

The Higher Education Act (HEA) of 1965, as amended, authorizes most federal financial aid programs for postsecondary education and a range of other programs relating to higher education access and quality.[47] Most federal student financial aid programs, including the Pell Grant and Guaranteed Student Loans programs, are in Title IV of the Act. Federal investment in these financial aid programs is substantial; for instance, Congress appropriated $11.7 billion for Title IV financial assistance programs in FY 1992.[48] (House Committee, 1992) When private and other non-federal funds leveraged by these programs are included, Title IV made available about $24 billion in grants and loans to students for academic year 1993-94.

In 1992, Congress reauthorized the Higher Education Act, making a number of important changes to the HEA's financial aid programs. According to Wolanin (1993), these changes will: expand aid eligibility for middle-class students, enhance the integrity of the student loan program, simplify the student aid application form, increase aid to nontraditional students (including expanding Pell grant eligibility for less-than-half-time students), and create a direct-loan demonstration program.

Overview

1. Federal Pell Grant Program

The Federal Pell Grant program provides need-based grants to undergraduates at public, nonprofit, and proprietary institutions. Pell Grant awards in FY 1992 ranged from $200 (minimum award) to $2,400 (maximum award), with an average award of about $1,500. (Budget of the United States, 1994) In FY 1992, the total funding level for the Pell Grant program was almost $5.5 billion, and nearly 4 million Pell grants were awarded during academic year 1992–93.[49] (House Committee, 1992)

To be eligible for a Pell Grant, students must be enrolled as an undergraduate in a degree or certification program and must have a high school diploma (or equivalent) or a demonstrated ability to benefit from the training offered by the institution. Financial eligibility is determined using a national need analysis formula. This formula includes the family's income and assets and is used to calculate the student's "expected family contribution" (EFC). Awards vary based on the cost of attendance and the EFC, subject to minimum and maximum grant levels.

2. Guaranteed Student Loans Program

The Guaranteed Student Loans (GSL) program seeks to defray the costs of higher education by making below market-priced loans available to eligible students and their families. While guaranteed student loans are financed with private capital, the federal government encourages lending by federally reinsuring loans against default and providing interest and other subsidies to participating banks and other lenders. The budget authority for the GSL program in FY 1992 was $4.8 billion. During academic year 1992–93, $15 billion in aid was available for guaranteed loans and 5.1 million guaranteed student loans were made.[50]

The GSL program includes several kinds of loans, including Stafford Loans, PLUS Loans, and Supplemental Loans for Students (SLS). Stafford Loans are the largest GSL program and make up over 75 percent of the GSL loan volume. Under the Stafford Loan program, the federal government pays interest costs while students are in school and during a grace and deferment period. Stafford Loans are need-based, with the amount students may borrow dependent on the students' EFC.[51] PLUS loans are made to parents of dependent students and provide no interest subsidy, and SLS loans are generally made to students no longer dependent on their parents. While SLS and PLUS loans are not need tested, borrowing cannot exceed the cost of attendance minus other aid.

Increasingly, the GSL program has been beset with high default rates and allegations of program fraud and abuse, particularly at proprietary schools. For instance, the GSL default rate for proprietary school students is nearly 40 percent, which is nearly twice the rate of any other group. (Fraas, 1990) There is concern some proprietary schools may be charging high tuition for low-quality services, hence exploiting both students and the loan programs.[52] To address this concern, the U.S. Department of Education has implemented a range of strategies including investigating schools with high default rates and using IRS refund offsets to collect defaulted loans. Further, Congress, in the HEA reauthorization, mandated additional strategies to address fraud and abuse in the loan program.

Implications for School-to-Work Opportunities

For School-to-Work Opportunities programs that include a postsecondary education component—such as a vocational education program at a community college or proprietary school—the Pell Grant and Guaranteed Student Loan programs can subsidize these educational costs. Using Title IV funds for vocational education would not necessarily require a shift in priorities for federal aid, as a significant fraction of federal student aid currently goes to vocation education. For example, one report estimates about 35 percent of federal aid goes to vocational students.[53] (Goodwin, 1989) In fact, proprietary school students alone receive about $5 billion in Title IV programs, which makes "student aid. . .the largest source of federal assistance for job training." (Fraas, 1990)

Nonetheless, the extent to which federal aid funds can support school-to-work efforts is limited in several ways. First, financial aid programs that are need based, such as Pell Grants and Stafford Loans, provide the greatest benefit to students whose EFC is small and hence may not be available to better-off students. However, the recent shift in the HEA reauthorization toward bolstering support for middle-class families may make this less of a consideration. Second, federal funds can only be used for certain forms of postsecondary education. For instance, Pell grants are only available to students in degree or certification programs, and loans can only be used at institutions that meet certain eligibility criteria. As a result, school-to-work programs that include federal financial aid must ensure students are enrolled in postsecondary education programs for which federal aid can be used. These eligibility restrictions may become more stringent given the recent concerns about fraud and abuse in the student loan programs, particularly with respect to proprietary schools. Finally, some students may not be aware of federal aid programs or may need help applying for aid. In these cases, school-to-work programs may play a role in informing students of their options and helping them with forms.

Chapter 1 of Title I of the Elementary and Secondary Education Act

Overview

Chapter 1 basic grants (including concentration grants) provided over $6 billion in FY 1993 funding to the nation's school districts to improve the educational performance of low-achieving children living in low-income neighborhoods. Chapter 1 funds typically are used for remedial reading and math programs, supporting teachers or instructional aides who through a variety of approaches augment eligible students' instruction.[54] The Chapter 1 program often emerges in discussions of the School-to-Work Opportunities proposal because of the heightened importance this proposal places on requiring students in career majors to demonstrate proficiency in core academic subjects.

The following sections briefly describe provisions in the Chapter 1 program that are important to the School-to-Work initiative and also discuss how the Clinton Administration recommends Congress change some provisions when it reauthorizes Chapter 1.

1. District and School Targeting of Funds

Almost all districts and a large proportion of schools (primarily elementary) currently receive Chapter 1 funds. The funds are targeted to school districts based on counts of children from poor families.[55] Districts must use poverty counts to determine which schools are eligible to receive funding and must fund schools based on assessments of need.[56] However, the law also gives districts flexibility to serve schools that are not necessarily the poorest. This situation has led to concerns the dollars are too thinly spread to accomplish their intended results and they fail to reach many schools with significant levels of poverty.

The Clinton Administration has proposed Congress move to tighten the targeting of Chapter 1 funds to further concentrate resources on high poverty districts and schools. The Administration's proposals include shifting the amount of dollars awarded as concentration grants, requiring districts to serve all schools with 75 percent or more poor children, and removing provisions that allow districts to distribute Chapter 1 funds to schools with lower concentrations of poverty.

2. Selection of Eligible Schools and Students

Most districts focus Chapter 1 dollars on elementary schools, largely due to the widespread belief in the importance of early intervention. This preference for targeting Chapter 1 funds on the elementary grades has been reinforced by federal requirements that limit Chapter 1 funded services only to eligible students—usually defined as those with low achievement—and that require districts to ensure Chapter 1 services supplement state and local funds. Documenting the supplemental nature of Chapter 1 services has proven more clear cut in elementary schools than in high schools.

As noted previously, the Administration's reauthorization proposal calls for districts to serve *all* schools with 75 percent poverty. Sources within the U.S. Department of Education estimate this may lead to 500 more high schools becoming automatically eligible for Chapter 1 support. Beyond this proposal, however, no other change has been proposed to require districts to include more secondary schools in Chapter 1.

3. Schoolwide Projects

Over the years Congress has modified the Chapter 1 program to give schools with high concentrations of students from poor families greater flexibility in using Chapter 1 dollars to improve the overall educational program. Currently, schools with 75 percent or more of their students from poor families can use Chapter 1 funds for programs to help all students, not just those who are below average in their achievement. This provision many potential pedagogical and related benefits, including the removal of many compliance obstacles experienced by secondary schools that operate Chapter 1 programs. The availability of the schoolwide provision, however, has not always been widely understood; moreover, relatively few high schools are able to meet the poverty concentration criterion.[57]

The Administration's proposal for the Chapter 1's reauthorization would lower the schoolwide provision to a 50 percent poverty threshold. In response to concerns that schoolwide programs have often operated at the margins of instructional reform and tended to concentrate on lowering class size, the proposal also would require eligible schools to undergo a year of planning how Chapter 1 will assist schoolwide improvements to the educational program.

4. State and Local Decisionmaking Structure and Accountability for Student Outcomes

Many decisions about Chapter 1 instructional programs, the eligibility of schools, and the allocation of Chapter 1 resources to schools are made at the local level, but state education agencies can be highly influential in these decisions. The federal law charges state education agencies with the role of supervision, administration, and technical assistance. While these responsibilities may appear to minimize the state's influence over local decisions, quite the reverse has occurred in many states.[58] School district staff frequently look to the state agency staff to ensure their Chapter 1 programs comply with all legal specifications governing the program. State Chapter 1 officials also can add requirements for districts to meet in their applications for Chapter 1 funding, and they frequently interpret provisions that govern local operations. Thus, state staff often are key in supporting and approving changes in traditional practices at the local level.

State Chapter 1 officials are required to designate schools that fail to show any change in Chapter 1 students' achievement, or that show a decline, over the course of the year as in need of improvement. Districts and schools so designated must complete a series of corrective plans and obtain advice from experts that focus on steps to upgrade students' performance; however no financial penalties are exacted. States are also encouraged to adopt measures other than norm-referenced tests to assess students' performance on basic and more advanced skills.

Implications for School-to-Work Opportunities Activities

Chapter 1's major contribution to helping create the type of educational preparation envisioned in the School-to-Work Opportunities proposal lies in its potential to strengthen low-achieving students' academic skills so they stay in school and have the skills necessary to enter and succeed in various career majors. New insights from the field of cognitive science that reveal the importance of context and meaning to student learning provide an important bridge between Chapter 1 instructional approaches and the types of integrated learning called for in restructured vocational education programs. Chapter 1's parental involvement requirements also offer schools opportunities to reach out to parents and address their concerns about the possible adverse effects of specializing in a career path while in high school. In the abstract, at least, there appears considerable room for Chapter 1 and school-to-work programs to reinforce each other's missions.

Several features of the Chapter 1 program as it has evolved in practice, however, may become obstacles to realization of this potential.

1. Directing Chapter 1 Funds to Secondary Schools

For a variety of pedagogic and administrative reasons, district officials have focused available Chapter 1 funds on elementary schools. Although the Administration's reauthorization package seeks to alter this situation, absent an infusion of significant dollars (which is unlikely under current fiscal projections) that would give districts new resources to invest in high schools or a convincing demonstration of the educational benefits of Chapter 1 programs in secondary schools, many district officials will continue to fund early intervention strategies.

Of course, some districts already choose to fund secondary school Chapter 1 programs and others could follow without waiting for additional funding or demonstrations of these programs' impacts on youths. These other districts might find this decision more appealing if they could institute schoolwide approaches in secondary schools. The Administration's proposal to lower the poverty concentration threshold from 75 to 50 percent is consistent with this notion since it would open the schoolwide option to more districts and schools. Allowing high schools to meet the concentration threshold based on poverty levels in their associated feeder schools, an idea currently under consideration within ED, also could help overcome high schools' difficulties in measuring poverty.

2. Student Eligibility

If high schools do not qualify for schoolwide programs, they must ensure services reach only eligible students, that is, those who are defined as below average achievement. In situations that require student targeting, evidence suggests replacement classes may present a Chapter 1 design for secondary schools that best overcomes students' scheduling problems and any stigma associated with the Chapter 1 program. (Zeldin et al., 1991) Replacement classes usually carry credit, do not separate students from a regular schedule of classes, and do not interfere with after-school activities or jobs. Replacement classes, however, entail burdens of their own. They usually require developing a curriculum that meets all state and district standards for academic credit and, according to ED's interpretations of the nonsupplant rule, they must receive additional funding from state and local sources.

3. Effective Chapter 1 Instructional Strategies for Older Youth

Chapter 1's expressed goal to combine higher order as well as basic academic skills has not yet been realized in many secondary school Chapter 1 programs. School staff encounter numerous challenges in making the shift to content that is not hierarchically structured along a simple to complex continuum. To foster successful incorporation of higher order skills in classes for secondary school students will require teachers and staff to conduct much more focused planning, acquire knowledge of effective practices, and select appropriate curricular materials. Redesigned, challenging Chapter 1 programs are possible, but are not now the norm in many secondary schools.

Chapter 2 of Title I of the Elementary and Secondary Education Act

Overview

The Chapter 2 program for over 12 years has provided block grants to states and local school districts to improve elementary and secondary education programs in public and private schools. In FY 1993 Congress appropriated about $450 million in Chapter 2 grants to states. The states must distribute 80 percent of these funds to school districts through formulas that give priority to districts serving at-risk and "high-cost" children. The hallmark of the Chapter 2 program has been flexibility for states and school districts to use the funds to further their own priorities for educational improvement with a minimum of administrative requirements and paperwork.

Bounds do exist on states' and school districts' discretion to use Chapter 2 dollars. The law requires states and districts to target funds on seven broad areas of assistance.[59] Furthermore, state education agencies must use a portion of the funds they retain for "effective schools" programs,[60] they must limit state administrative spending, and they must consult with a broadly representative group appointed by the governor in each state. The Chapter 2 program explicitly prohibits state inroads on the decisionmaking latitude of district and school staff. Importantly, Chapter 2 funds cannot supplant state and local funds that would have been made available in the absence of Chapter 2 support. This provision reportedly has restricted school districts' use of Chapter 2 funds for a number of reform-related activities, particularly those mandated by state legislatures. (SRI, 1992)

As is often the case with block grants, Chapter 2's broad array of potential uses invites initiatives to refocus the resources on new federal agendas. The Clinton Administration proposes to merge Chapter 2 with the Title II Eisenhower Mathematics-Science Grants Program in a new program that would expand federal support of district- and school-level professional development activities. These activities initially would place priority on mathematics and science, and, as funding increased, would expand to other core academic subjects listed in Goals 3 and 4 of the National Goals.[61]

Implications for School-to-Work Opportunities Programs

Chapter 2's relatively unconstrained funds offer considerable opportunities for local school officials to undertake activities that could help create and sustain a new path of career education in high schools—activities such as curriculum development; training of instructors, counselors, and other staff; and the acquisition of necessary equipment. These opportunities are further increased by the law's explicit reference to "innovative projects that include technology education" in one of the seven authorized areas of targeted assistance.

The opportunity to leverage school-to-work initiatives with Chapter 2 resources arguably might be diminished by the Administration's proposed changes to Chapter 2 that attempt to limit the flexibility available to states and school districts. The likelihood of this occurrence will depend on the interpretation officials give to the term "core academic subjects" and whether they will include or encourage attention to many of the applied mathematics and science courses that are likely to be introduced as part of the envisioned career majors.

Regardless of reauthorization, however, plans to harness Chapter 2 resources on behalf of School-to-Work Opportunities reforms will need to take into account several realities and potential difficulties that are presented by the current Chapter 2 program. Briefly summarized, these include the following:

- Local education officials and staff control the decisions about the use of 80 percent of Chapter 2 resources. These officials will have to buy into placing a priority on reforming secondary school-to-work programs with Chapter 2 funds.

- If school-to-work reforms are mandated at the state or local level, supplement not supplant provisions could limit the use of Chapter 2 funds. It is not clear whether these nonsupplant provisions may be subject to the waivers included in the School-to-Work Opportunities bill.

- Chapter 2 funds are quite modest, resulting in a median amount of $8,400 across districts of all sizes and $360,000 in very large districts. (SRI, 1992) They are subject to claims from many competing interests—librarians, gifted and talented programs, community education programs, teachers at all levels, health education programs, and others. School-to-work proponents will be one among many groups vying for these modest amounts at the local level.

Eisenhower Mathematics and Science State Grants Program
Title II of the Elementary and Secondary Education Act

Overview

The Eisenhower Mathematics and Science State Grants program seeks to improve the skills of teachers and the quality of mathematics and science instruction in the United States FY 1993 funds amounted to about $260 million, which, according to statute, must flow to state education agencies, state agencies of higher education, colleges, and school districts. The importance of mathematics and science proficiency to future careers in business and industry and the related need to develop challenging mathematics and science courses that incorporate real-world applications make the Eisenhower program a significant resource for developing new paths of career preparation in the nation's high schools.

Almost all school districts, independently or through a consortium, receive Eisenhower grants. A much smaller proportion of colleges participate, however, in the postsecondary competitive grants component of the program.[62] States must distribute at least two-thirds of their total Eisenhower state grant to school districts through a formula that awards half of the funds based on enrollment and half based on poverty. Approximately one-fifth of the total grant amount must be awarded competitively to postsecondary institutions or through cooperative grants that can include teams of museums, professional associations, school districts, private industry, and postsecondary institutions. The state agencies can retain the remaining funds for leadership activities, technical assistance, demonstration projects, and administration.

The Eisenhower program allows a broad spectrum of activities that relate to the development of current or prospective teachers of mathematics and science or the improvement of elementary and secondary school instruction in these subjects.[63] The funds must supplement and not supplant other funds made available for similar activities from state and local sources. Information about how Eisenhower grants have been used reveals state and school officials exercise the broad discretion afforded them by supporting a variety of projects, many of which emphasize revamping curricula to address problem-solving and higher order skills and to incorporate realistic, everyday problem situations or hands-on demonstrations of abstract concepts.

The law emphasizes mathematics and science in the elementary and middle schools by requiring districts to use all additional funds over the FY 1990 level to train teachers at these grade levels. The school district grants have drawn criticism for the relatively short duration of most inservice training they provide and the tendency for training to be unrelated to larger school-level reforms. Although the postsecondary grants tend to spread more evenly across grade levels and provide longer training programs for teachers, they also only occasionally are linked with major school reform initiatives.

The Clinton Administration's proposal for reauthorization urges consolidating the Eisenhower program with the Chapter 2 block grants program to create a larger pool of resources to concentrate on the professional development of teachers. The new grants program would place first priority on mathematics and science, and as funds became available, would extend to other core subjects addressed in the third national goal. The proposal would increase the share of funds awarded to school districts and focus most of these funds on school-based, as opposed to districtwide, professional development activities.

Implications for School-to-Work Initiatives

The broad scope of the Eisenhower program is conducive to helping develop the mathematics and science portions of the infrastructure necessary to implement the new approaches to career preparation envisioned in the Administration's School-to-Work proposal. Because the Eisenhower program provides enabling funds to help districts and schools implement school reform agendas, redesign of the high school curriculum to ensure a more demanding, coherent sequence of coursework to prepare students for careers in the workforce would seem to qualify as a legitimate target of these funds. But while opportunities exist in principle, there are impediments to states and school districts directing Eisenhower funds to such initiatives.

One impediment is the strong tendency in high schools for academic courses to be separated from vocational courses. This separation is deeply embedded in the culture of schools and behavior of educators. Eisenhower grants, although used to inject real-world problems and hands-on applications into mathematics and science classrooms, appear heavily slanted toward academic classes and teachers. Efforts to achieve curricular integration as called for in the Perkins Act's reforms of traditional vocational education have encountered this chasm between academic and vocational faculty and appear to have made only modest progress in reducing the distance between the two. The result is for integrated curricula to involve adding academic material to vocational courses rather than incorporating vocationally oriented material into academic courses.

A second impediment comes from Congress' decision to require school districts to concentrate their activities on elementary and middle-school teachers and curricula. Although the requirement may help to improve all students' competence in these subjects before they enter high school, it works against using Eisenhower grants to enhance high school students' proficiencies in these subjects or revamping the mathematics and science components of the envisioned career pathways.

Programs Addressing the Needs of Youth With Disabilities: Individuals With Disabilities Education Act, the Rehabilitation Act, and the Americans With Disabilities Act

Three federal laws will heavily influence the involvement of youth with disabilities in the school-to-work career preparation paths envisioned for the nation's secondary schools: the Individuals with Disabilities Education Act (IDEA), the Rehabilitation Act (that contains both the VR basic grants program and Section 504 regulations), and the recently enacted Americans with Disabilities Act (ADA). Together these programs provide a number of protections and special services to persons with disabling conditions. Because the transition from school to work and competitive employment constitute critical issues for youth with disabilities, the provisions of these programs that influence this interface are of major significance. Previous research has indicated students with disabilities are much more likely to enter competitive employment if they participate in a formal, paid, or credit-bearing work experience as part of their secondary schooling. (NAVE, 1989) The following sections briefly summarize key features of these federal programs. A concluding section addresses the combined implications for the inclusion of students with disabilities in state and local School-to-Work Opportunities initiatives.

Overview

1. Individuals with Disabilities Education Act (IDEA)

The IDEA state grants program (Part B) ensures all persons with disabilities from age 3 through 21 receive a free, appropriate public education in the least restrictive environment. The IDEA grants program provides over $2 billion in federal support to state education agencies to assist with the cost of special education and related services for eligible children. The state education agencies must pass 75 percent of these funds to local school districts and intermediate education units. Although almost all school districts in the country receive IDEA funds, the vast majority of funds for students' special education comes from state and local funds. The IDEA specifies 11 categories of disability that qualify a student as eligible for the special education guaranteed by the law. Each child identified as having one of these disabilities must have an individualized education plan (IEP) that specifies their present level of performance, annual goals and objectives, services to be provided, and the basis for an annual determination of whether the goals have been accomplished.

To address the needs of adolescent students with disabilities as they prepare to leave school, the law also requires the preparation of annual Individual Transition Plans (ITPs) for students beginning no later than age 16 and encourages their use at age 14 or younger, as appropriate. These plans stipulate interagency responsibilities for transition services for each youth. The law describes transition services as "a coordinated set of activities, designed within an outcome-oriented process, which promotes movement from school to postschool." (Public Law 101-476, October 30, 1990)

2. Rehabilitation Act of 1973, As Amended

Unlike the personal entitlement to special educational services that is the hallmark of the IDEA program, the Rehabilitation Act's state-federal grants program operates on the basis of individuals being deemed eligible for services circumscribed by the availability of funds. The state-federal grants program, through the provision of approximately $2 billion a year in FY 1993, helps to support a range of rehabilitative services in each state. These services available to persons whose disabilities constitute a serious barrier to employment and for whom there is a "reasonable expectation" that receipt of the services will benefit them through employment.[64] The federal funds are distributed by formula to state VR agencies.[65] These agencies use the funds to purchase or directly provide services to eligible applicants. An array of services can be supported; allowable services include diagnosis and evaluation, guidance, counseling, job placement, and a range of purchased services such as therapy and training.

Secondary school youth with disabilities generally become eligible for VR assistance around the age of 16; this age can fluctuate depending on the state's definitions of working age and the emphasis specific state agencies give to collaborative transition programs in the last year or two of high school. Youth who are still in school, just like out-of-school VR clients, remain clients in the VR system until they are placed in a job. Their services can include stipends for work experience, job coaches, postsecondary tuition, books, living expenses, travel expenses, prostheses, therapy, and the like. In practice, various agencies like school districts share the cost of the services included in each student's Individualized Work Rehabilitation Plan (IWRP), an individualized document that must be developed for all VR clients. While the scope of VR-supported services is broad, VR staff must first must seek "comparable benefit" from other available resources (for example, Pell college grants or state and local programs for special education).

Although state and local collaboration between education and VR agencies has received a major federal push in recent years, the VR system also has been subject to a second policy directive: to place first priority on serving eligible applicants with the most severe disabilities. State VR agencies must specify three categories of severity: most severe (which would include persons with multiple disabilities or profound mental retardation), severe, and nonsevere. If the agencies do not have funds sufficient to serve all eligible applicants in these categories, they must institute order-of-selection procedures to serve individuals with the most severe disabilities first. Less than 20 VR agencies are currently using order-of-selection procedures, but this number may rise due to limited resources and the high cost of serving the most severe applicants. Ultimately this priority may affect the resources available to serve transitional youth, who are increasing in numbers but may not qualify under the criteria for severity.

3. Section 504 of the Rehabilitation Act

This statute prohibits discrimination on the basis of a handicapping condition by the federal government or any recipient of federal assistance. It provides no financial assistance. ED through the federal Office for Civil Rights monitors federal recipients' compliance, and, in addition, individuals have recourse through the court system for redressing alleged acts to discrimination. The Section 504 provision and its accompanying regulations go further than the right to a free, appropriate public education contained in the IDEA; they ensure all public and private institutions receiving federal assistance accommodate the needs of otherwise qualified persons with disabilities. Consequently, schools, colleges, and other institutions must make reasonable accommodations to allow full participation by all individuals, regardless of their disability. The definition of handicap as used in the statute extends broadly to include those individuals who may be perceived as having a disability as a result of physical appearance or behavior as well as those who are identified by established assessment procedures.

4. Americans with Disabilities Act (ADA)

This law extends civil rights protections for persons with disabilities into the workplace, transportation, housing, shopping malls, and the like. The law prohibits discrimination on the basis of disability in employment, transportation, and public accommodations, generally extending Section 504 protections beyond those entities that receive federal assistance. As with other civil rights legislation, businesses with fewer than 15 employees are exempted from the employment requirements, and those affected by the requirements are protected from measures that involve significant expense. Nevertheless, the law requires employers to take positive steps to modify or restructure jobs and adjust other aspects of the work environment to accommodate persons with disabilities who are otherwise qualified for the jobs they seek. Furthermore, as in Section 504 protections, the definition of persons with disabilities is written broadly to include those persons with physical or mental impairments that substantially limit a major life activity as well as those who are perceived as having such impairments.

Implications for School-to-Work Opportunities Initiatives

The impact of these federal programs for youth with disabilities will be twofold. First, all high school preparation paths involving school-based and work-based components will have to ensure accessibility to such students. Ensuring this accessibility will include taking such measures as modifying jobs that become part of the work-based component and adopting alternative performance assessments that enable students with disabilities to demonstrate their mastery of academic skills and occupational skills, whether as a precondition for entrance to a career major or throughout the course of fulfilling requirements of the major. Although these obligations are reinforced by such laws as the Perkins Act, their full implementation in schools and local businesses may be another matter.

The second impact from federal legislation related to youth with disabilities entails financial and information (or technical assistance) resources. The IDEA state grant dollars theoretically could provide resources for districts to devote to additional staff positions or staff development activities that adjust curriculum or plan for the inclusion of students with disabilities in the new career majors. For example, some states and school districts in the past elected to concentrate their IDEA funds on programs serving preschool children with disabilities. Although the federal IDEA funds are relatively modest when compared to state and local resources, they can amount to a significant resource in large districts. The major difficulty will be modifying commitments districts have already made to other priorities.

Relatedly, the state-federal VR basic grants program potentially can contribute to assisting eligible youth with disabilities to participate in school-to-work programs in their last few years of high school or in postsecondary schools by providing counseling, stipends for work, job search, transportation, living expenses, and other relevant services. The need to extract comparable benefits from other sources of funding may limit the application of VR resources in specific situations, however. Another constraint will be the competition for limited funds brought about by legislative requirements that oblige VR agencies to serve individuals with the most severe disabilities first. As a result, many students with disabilities that constitute moderate impairments, although eligible in principle, may not be among those the VR system actually has capacity to serve.

Job Opportunities and Basic Skills Training Program (JOBS)

Overview

The JOBS program is part of the Family Support Act Congress passed in 1988 to reform the Aid to Families with Dependent Children (AFDC) program. The JOBS program provides assistance to states for the provision of academic and vocational training, work experience, and support services to AFDC recipients, all with the aim of helping these recipients become economically self-sufficient. Because one of the major goals of the JOBS program is to ensure the educational and employability skills of adolescent parents who qualify for welfare, the program can serve as a conduit for these youth to enroll in the career majors envisioned in the School-to-Work Opportunities bill. JOBS funds also can potentially assist AFDC-eligible students as they participate in the school- and work-based components of these new options in secondary schools.

To receive JOBS matching funds, state welfare agencies must require all nonexempt AFDC recipients to participate in the program, subject to available resources.[66] States must assess each JOBS participant's educational, child care and other support service needs along with their skills, work experience, and employability. Based on the results of this assessment, participants in JOBS receive a range of services that must include education for those without basic literacy or proficiency in English, job skills training, job readiness activities, job development and placement, and supportive services such as child care and travel expenses. In addition to the above listed services, states must include two of the following in their package of services: group and individual job search, on-the-job training, work supplementation (which carries job subsidies funded by AFDC), and community work experience (which entails unpaid work as a condition for recipients' receiving an AFDC grant).[67] States also must extend child care and Medicaid benefits to JOBS participants and their families for up to 1 year after the participant leaves AFDC for work.

States' implementation of the JOBS program varies greatly across almost all dimensions: procedures, providers of education and training, the exemption policies, state matching funds, and the configuration of services delivered to different groups of participants. As a result of waivers to conduct welfare experiments and a variety of optional implementation approaches there are probably upwards of 50 different JOBS programs in the country. Moreover, the sluggish economy in many states has limited state matching funds for JOBS and, as a result, fostered lower than anticipated participation rates. Concerns also have been expressed about the adequacy of child care subsidies to purchase quality child care for participants, the remedial nature of the educational services, and the career potential of many jobs used to provide work experience. States soon will face an additional obligation to adopt performance standards recommended by the U.S. Department of Health and Human Services. How these standards, which are to be coordinated with JTPA standards, will affect the incentives for service delivery remains to be seen.

Implications for School-to-Work Opportunities Initiatives

The variability in the JOBS program across states makes it difficult to point to specific implications. Nevertheless, two broad implications can be identified, both of which suggest rather limited expectations for the JOBS program to serve as a major resource to sustain School-to-Work initiatives in the high schools. First, students in secondary school (or returning to secondary school) can be participants in the JOBS program, subject to states' policies and available resources. For example, if students were to enter the type of career preparation paths identified in the School-to-Work Opportunities initiative, their participation in this educational program would appear to satisfy the JOBS requirement that participants without a high school degree enter into an educational activity. (Of course, almost any full-time high school program would also satisfy the requirement.) Conceivably, JOBS funds also could provide child care assistance and transportation for these students to participate in school- or work-based components. The supplement and not supplant requirement raises questions about whether stipends or job subsidies could be used for JOBS high school students when other state and local sources might provide similar stipends for other high school students in school-to-work programs.

Directly at odds with the previous discussion is the second implication of added pressures on the states to stretch the welfare dollar as far as possible. This pressure may make state agencies reluctant to allow students attending high school full time (whom the law defines as exempt) to obtain benefits from the JOBS program. Out-of-school youth are a priority population for JOBS; this status is reinforced by the variable federal matching rates in the JOBS program, which include out-of-school youth in the group that obtains the enhanced federal rate. While some out-of-school youth may return to high school full time to meet the education requirement, others will enter educational programs outside the formal school system. These alternative educational programs conceivably could benefit from alignment of their instruction with the career preparation curricula and structured work experiences that define the school-to-work course of study envisioned for the formal school system. The skill certificates described in the School-to-Work Opportunities legislation, once developed, could provide a mechanism for accomplishing this alignment.

Notes

1. JTPA was originally authorized as the Job Training Partnership Act (JTPA) of 1982 (Public Law 97–300; 29 U.S.C. 1501). JTPA is described here as amended by the Job Training Reform Amendments of 1992 (PL 102–367), which became effective on July 1, 1993. The amendments, among other changes, separated the Adult and Youth Training Programs (now in Titles II–A and II–C respectively), further targeted the Act toward the disadvantaged and hard-to-serve, and clarified coordination requirements.
2. The Adult Training Program (Title II–A) is not included because it is similar to the Youth Training Program, except that its target population is 22 and above. Job Corps, which provides intensive services in a residential setting to severely disadvantaged youth, is not discussed here because it is self-contained and narrowly targeted to extremely disadvantaged groups.
3. State Job Training Coordinating Councils consist of representatives from the private sector, state and local government, organized labor, community-based organizations, and the general public.
4. Out-of-school youth must be at least 16 years old. In-school youth who are 14 and 15 may receive Title II–C services if specifically provided in the SDA's job training plan.
5. Funds are allocated to SDAs based on a federal formula that includes the local employment rate, concentration of unemployment, and number of economically disadvantaged youth in the SDA. States retain 18 percent of Title II–C funds for administration (5 percent), incentive grants, capacity building and technical assistance (5 percent), and state education coordination grants (8 percent).
6. Some important restrictions on the uses of Title II–C to subsidize employment deserve mention: (1) Title II–C cannot be used to fund public service employment. (2) On-the-job training must be in positions that have career advancement potential and must include a formal program of structured job training that provides participants with a sequence of instruction in work maturity skills, general employment competencies, and occupationally specific skills. OJT programs cannot exceed the greater of 6 months or 500 hours, and JTPA funds can only be used to reimburse employers for 50 percent of the wages paid to OJT participants. Further, employers who have failed in the past to provide long-term employment opportunities to JTPA participants may be ineligible to receive OJT funds. OJT participants who have not graduated from high school must be enrolled in high school or an acceptable equivalent.
7. Economic disadvantage is determined by comparing the youth's family income to the higher of (1) 100 percent of the official poverty line for his or her family size, or (2) 70 percent of DOL's living standard income level. In-school youth who do not meet the definition of economic disadvantage may participate if they receive Chapter 1 services (under the Elementary and Secondary Education Act of 1965) or if they meet the free meals requirements under the National School Lunch Act (42 U.S.C. 1751 et seq). [Sec. 263].
8. There are two exceptions to these eligibility requirements. First, programs can serve youth who are not economically disadvantaged but meet the definition of hard-to-serve, provided these youth make up no more than 10 percent of the program's participants. Second, under the Schoolwide Project for Low-Income Schools provision, SDAs can provide services to all students enrolled in public schools in poverty areas, served by Chapter 1-eligible local educational agencies, and whose student body is at least 70 percent hard-to-serve youth. [Sec. 263].
9. In fact, the legislation authorizes a range of services including basic and remedial education, institutional and on-the-job training, work experience, youth corps programs, counseling, occupational training, preparation for work, outreach and enrollment activities, employability assessment, job referral and placement, job search assistance, and supportive services.
10. States may use up to 20 percent of the set-aside for general coordination activities such as technical assistance, professional development, and curriculum development. At least 80 percent of the set-aside must be used to provide direct education and training services to JTPA-eligible participants. These direct services must fall into one of three areas: school-to-work transition

services (including dropout prevention efforts), literacy and lifelong-learning opportunities, and programs that promote women's roles in nontraditional employment.

11. Sec. 123(a)(2)(A).
12. There are no performance standards attached to the program; however, DOL is required to fund an independent evaluation of the program.
13. Although the original legislation was targeted exclusively at youth, recent amendments (Public Law 103–50) increased the maximum age from 21 to 30.
14. Communities can use a range of program models, including: nonresidential learning centers; alternative schools; combined activities including school-to-work, apprenticeship, or postsecondary education programs; teen parent programs; youth centers; initiatives to increase rural student postsecondary enrollment; public-private collaborations to assure private sector employment and continued opportunities for youth; and initiatives, such as youth corps programs, that combine community and youth service with education and training activities.
15. According to federal child labor laws, apprentices must be at least 16 years old (18 years old for hazardous occupations); however, for insurance reasons most programs set the minimum age at 18. (DOL, 1991)
16. More generally, federal and state activities include: analyzing training needs and developing apprenticeship standards, helping programs meet EEO and affirmative action requirements, developing administrative procedures, locating or developing technical instruction curricula, conducting program evaluations, quality assessment audits and EEO compliance reviews, compiling and disseminating labor market information, registering apprenticeship programs and apprentices, issuing completion certificates, and helping to develop and promote school-to-apprenticeship programs. (Bureau of Apprenticeship and Training, 1993)
17. Bailey and Merritt (1993) point out that in the construction industry, registered apprentices are accepted by labor in part because they "are the *only* workers who can be paid below the wage for fully skilled workers." (42).
18. In addition, state ES agencies can enter into contracts with other government agencies or nonprofit organizations to provide services not specifically authorized by the legislation.
19. ES could be more useful for youth if services were brought into high schools. However, according to Kazis (1993), a federal program to do this was abandoned in the 1980s.
20. Specifically, the Act covers employees engaged in interstate commerce or in the production of goods for interstate commerce (regardless of the employer's annual volume of business), employees in enterprises whose annual gross volume of sales is over $500,000 and employees of public agencies, hospitals, and schools.
21. For instance, state laws may include additional requirements for employment age certification and limits on hours for school-related, nonschool-related, and nighttime work. (Rose et al., 1993)
22. As of April 1, 1991, the minimum wage was $4.25 per hour, and the minimum overtime rate was one and one-half times the employee's regular wage for hours worked over 40 in one work week.
23. Youth may be employed by a different employer at the training wage for an additional 90-day period if certain additional requirements are met. However, no individual may be employed at the training wage for more than a total of 180 days. Further, employers cannot displace regular employees in order to hire youth at the training wage.
24. Information in this section on child labor laws is taken primarily from Rose et al. (1993).
25. The provisions discussed here apply to nonfarm workers.
26. Youths 14 and 15 years old may work outside school hours in certain jobs for no more than 3 hours on a school day or 18 hours in a school week, and 8 hours on a nonschool day or 40 hours in a nonschool week. Also, work may not begin before 7 a.m. or end after 7 p.m., except from June 1 through Labor Day, when evening hours are extended to 9 p.m.
27. For apprentices, the hazardous work must be incidental to the training, intermittent and for short periods of time, and closely supervised. For student learners enrolled in cooperative vocational

training programs, the hazardous work must be incidental, intermittent and for short periods of time, and supervised; must include safety instruction; and must proceed according to a prepared schedule.

28. The State Education Agency must obtain approval from the Administrator of the Wage and Hour Division before operating a WECEP program.
29. State (and local) laws may impose additional constraints on school-to-work programs, and in all cases program operators need to ensure compliance with all applicable federal, state, and local laws.
30. States must award 75 percent of their basic grant to local school districts, area vocational-technical schools, and postsecondary institutions through formulas that emphasize the relative number of disadvantaged students. Funding formulas for school districts, for example, must tie 70 percent of dollars to the number of economically or academically disadvantaged students, 20 percent to the numbers of students with disabilities, and 10 percent to relative enrollment. While the state board of vocational education determines the relative shares available to the secondary and postsecondary sectors and can request waivers to use specific measures of disadvantagement and disability in postsecondary institutions, the state cannot otherwise alter the targeting of basic grant funds on the need factors set by statute. Similar targeting of funds occurs at the local level. School districts and postsecondary institutions that receive basic grants are obligated to place priority on funding a limited number of sites or program areas that serve the highest concentration of students with special needs. The intent of this requirement is to ensure that the programs serving students with special needs receive sufficient levels of funding to make a difference in the quality of services. Also illustrative of Perkins II's emphasis on sufficient funding levels is a requirement making most districts that do not qualify for a minimum Perkins grant of $15,000 ineligible for support unless they join a consortium of districts. A similar provision prohibits states from awarding grants of less than $50,000 to postsecondary institutions.
31. The law generally refers to schools providing a coherent, related sequence of courses to build students' competence in both areas.
32. These include upgrading the curriculum, purchasing or adapting equipment, providing remedial services, giving guidance and counseling, providing inservice training, and implementing apprenticeship and tech-prep approaches. The special mention of these programs can be interpreted as Congress' encouragement of these approaches.
33. Because of the history of vocational education, these state boards are relatively long-standing, somewhat specialized, and in some expert observers' estimation, insulated bodies. Perkins II continues the requirement for a state council on vocational education that advises the state board in each state. The majority of members on the council must represent the private sector, broadly defined. In addition, Perkins II contains numerous calls for the state board to coordinate with JTPA and private industry councils, special education authorities in the state, Chapter I of Title I of ESEA, and the Rehabilitation Act of 1973.
34. The states have the authority to add requirements for local applicants to meet, but only a few states have sought to use this source of influence over local spending choices.
35. These standards will serve as a basis for each basic grants recipient to annually evaluate the program effectiveness. In developing the standards, state boards must consider the performance standards prescribed for the JOBS program and JTPA programs in the state. Districts and institutions that fail to show progress meeting these standards must develop improvement plans—at first on their own and, if progress is still lacking, jointly with the state.
36. The CWS program is authorized by Title IV, Part C, of the Higher Education Act, as amended in 1992, and is one of the campus-based aid programs. These programs are distinct from portable aid programs over which institutions do not have discretion. Several states have college work-study programs, including Washington and California.

37. Federal grants are awarded to postsecondary institutions that meet federal student aid program eligibility rules based on a formula that combines a prior level of funding with an estimate of the financial needs of all eligible students attending the institution.
38. Specific restrictions apply to proprietary schools to ensure these institutions do not use CWS funds to employ workers for a business unrelated to their educational development.
39. The bill described here is H.R. 1804, as reported with amendments July 1, 1993.
40. The National Skill Standards Board's functions would include identifying occupational clusters, developing criteria to assess skill standard systems, and endorsing skill standard systems developed by partnerships of business, labor, education, and other relevant parties. In addition, the National Board would conduct workforce research related to skill standards, maintain a catalog of skill standards in other countries and in the states, provide technical assistance, and facilitate coordination among voluntary partnerships to promote the development of a coherent national system of voluntary skill standards. The bill authorizes $15 million in FY 1994 for the National Board.
41. The seven national education goals set standards for the year 2000 in the areas of school readiness, school completion, student achievement and citizenship, teacher education and professional development, mathematics and science, adult literacy and lifelong learning, and safe, disciplined, and drug-free schools.
42. Sec. 301(9), (10).
43. Sec. 306(c)1, (j).
44. Sec. 401.
45. Apling (1993) reports limited, federally funded efforts are already underway to develop and implement voluntary skill standards in industries such as tourism, metalworking, electronics, health science, and printing. The U.S. Departments of Education and Labor awarded a total of $4.7 million to 13 national trade associations and education groups in October 1992 in support of these projects, which are scheduled to be completed between December 1993 and October 1995.
46. In the newly reauthorized HEA, the Guaranteed Student Loans program is called the Federal Family Education Loans program (Title IV–B).
47. Title IV of the HEA includes student-based (or portable) financial aid programs such as Federal Pell Grants, Guaranteed Student Loans (or Federal Family Education Loans), and the Federal Direct Loan Demonstration program, and campus-based financial-aid programs such as college work-study and Perkins Loans.
48. The federal government is the largest source of student aid for higher education, providing about 75 percent of all student aid for higher education. (Wolanin, 1993).
49. The maximum grant in most years is less than the level specified by the authorizing legislation. The Pell Grant program is discretionary (not an entitlement)—hence, the maximum Pell Grant depends on the program's annual appropriation.
50. The GSL authorizing legislation sets maximum annual loan amounts. However, unlike Pell Grants, guaranteed student loans are entitlements, and hence the loans are not subject to further limits based on annual appropriations.
51. For Stafford loans, the annual loan limit is $2,625 for 1st-year undergraduates, $3,500 for 2nd-year undergraduates, and $5,500 for other undergraduates. Maximum loan amounts are smaller for students enrolled in programs that are less than an full academic year. Stafford loans are also available to graduate students.
52. Proprietary school advocates, by contrast, lay much of the blame for the high proprietary school default rates on the relatively low-ability, high-risk students proprietary schools often serve.
53. This number is based on a 1986 survey.
54. These approaches include giving students special help outside their regular class, working with eligible students in their regular class, providing an enriched replacement class in certain subjects, using computer-assisted instruction, and extending instructional time through before or after school programs as well as summer school. Many debates exist about the merits of these

alternative forms of instruction. Beyond reading, math, and language arts, Chapter 1 funds are used less commonly to provide English as a second language, instruction in reasoning and problem-solving skills, and the delivery of health, nutrition, and other social services.

55. Ninety-three percent of all districts in the country receive Chapter 1 funds through a federally prescribed formula that incorporates counts of poor children and the per pupil expenditure in each state. Additional Chapter 1 funds are channelled through Concentration Grants to districts with high concentrations of children from poor families.
56. The actual amount that a school receives typically is determined by the school's poverty level and the relative number of children who have low achievement in the school.
57. High schools typically are more diverse than elementary schools and consequently tend to have lower concentrations of poor students. Due to districts' heavy reliance on eligibility to participate in the free or reduced-price school lunch program as the accepted measure of school poverty, high schools encounter difficulty in accurately assessing poverty. Older youth are much less likely to participate in the school lunch program.
58. The state education agencies provide technical assistance, review and approve district applications, and implement the accountability system prescribed in federal statute and regulations.
59. The seven areas include (1) programs for children at risk of failing and dropping out of school; (2) acquisition of instructional and educational materials; (3) innovative schoolwide improvement programs, especially effective schools programs; (4) training and professional development of faculty and staff; (5) programs to enhance personal excellence of students and student achievement; (6) innovative projects related to the educational program or school climate; and (7) programs to help staff identify students who may be at risk of illiteracy in the future.
60. At least 20 percent of funds the states retain must be used for "effective schools programs," which are defined in the statute as school-based efforts seeking to foster on-going planning, strong leadership, a safe and orderly environment, emphasis on basic and higher order skills, high expectations for student performance, and continuous assessment and evaluation of programs. If states spend an appreciable amount from their own funds for such programs, they may seek a waiver to this requirement.
61. The Administration argues that this new authority will concentrate resources for professional development and help overcome the sporadic and short-term nature of an activity so critical to achieving Goals 3 and 4 of the National Education Goals. Subjects listed under Goal 3 include English, mathematics, science, history, and geography. Goal 4 calls for U.S. students to be first in the world in science and mathematics.
62. Available figures indicate during the program's first 4 years about 20 percent of degree-granting postsecondary institutions received grants. Generally speaking, the number of grants to community colleges—institutions that are likely to be very significant in local school-to-work programs—has been relatively small.
63. The allowable activities include preservice and inservice teacher training or retraining; recruitment or retraining of minority teachers; training and retraining in the use of computer, video, or telecommunication technologies linked to mathematics and science instruction; integration of higher order analytical and problem-solving skills into mathematics and science curriculum; and projects for individual teachers to improve teaching or improve materials. Schools with at least a 50 percent low-income population can use Eisenhower grants to purchase computers or telecommunications equipment.
64. Since the Congress amended the law in 1992, all individuals who apply to the VR system are presumed to benefit and VR staff bear the burden of demonstrating this presumption does not apply. The GAO, using 1990 national data supplied by the states, indicates about 60 percent of applicants nationwide were accepted into the program. VR staff must document and verify the status of all applicants.

65. There is a total of 83 state VR agencies in the 50 states, District of Columbia, and U.S. territories and protectorates. In 26 states, two state VR agencies exist—one focused on the general population with disabilities and the other on the blind persons.

66. Nonexempt persons are generally those who are considered able-bodied. The law defines exempt AFDC recipients as those who are ill or incapacitated, needed in the home to care for a child under 3, already employed 30 hours or more per week, children who are under 16 or who are attending school full-time, women who are pregnant and in the second trimester, persons who do not live in an area where the JOBS program is offered, and VISTA volunteers. States must require teenage parents who have not completed high school to participate in an educational program, even if these parents qualify for an exemption because they are providers of child care for young children. The JOBS program is a capped entitlement; matching rates vary, attaching different incentives to specific populations. Among the priority groups for obtaining the higher level of match are parents under age 24 who have not completed high school and are not enrolled in high school or a high school equivalency program, or who have had little work experience in the previous year.

67. Time and financial maximums are attached to specific services. In addition, federal dollars are subject to a requirement they supplement and not supplant state and local resources.

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